Motorola Solutions

MPACT LOCATION & ANALYTICS SERVER REFERENCE GUIDE

TABLE OF CONTENTS

Chapter 1 MPact Overview

Chapter 2 Locationing

Chapter 3 Configuration

Chapter 4 Operations

Chapter 5 About MPact

Chapter 6 MPact Integration with ADSP

Appendix A Customer Support

ABOUT THIS GUIDE

This chapter is organized into the following sections:

- *Using the Documentation*
- *Motorola Solutions, Inc. End-User License Agreement*

Using the Documentation

The following sections provide information about the document and notational conventions used in the guides, and provides a list of related documentation.

Document Conventions

The following conventions are used in this manual to draw your attention to important information:

NOTE: Indicates tips or special requirements.

CAUTION: Indicates conditions that can cause equipment damage or data loss.

WARNING! Indicates a condition or procedure that could result in personal injury or equipment damage.

Notational Conventions

The following notational conventions are used in this document:

- Italics are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents
- Bullets (•) indicate:
  - lists of alternatives
  - lists of required steps that are not necessarily sequential
  - action items
- Sequential lists (those describing step-by-step procedures) appear as numbered lists

Related Documentation

Motorola Solutions MPact Location and Analytics documentation includes the following:

- *Motorola Solutions MPact Location & Analytics Deployment Guide*
- *Motorola Solutions MPact Location & Analytics Server Reference Guide*
- *Motorola Solutions MPact Location & Analytics Toolbox Reference Guide*
- *Motorola Solutions MPact Location & Analytics Client Software Development Kit*

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Obtaining Software Licenses

To obtain software licenses for *MPact Location & Analytics Server, Toolbox or Client Software Development Kit*, provide the following information to Motorola Solutions:

- Identification
- Email address
- Payment

CHAPTER 1 MPACT OVERVIEW

Motorola Solutions MPact Platform for Mobile Marketing, shopping is centered on customer needs. It is the only indoor locationing platform to unify Wi-Fi and Bluetooth® Smart Technology to capture more analytics, accuracy and insight. Learn which aisles and products customers prefer, their shopping history, and what influences their buying decisions to create interactions that lead to transactions. MPact offers shoppers store maps to quickly find items, prompts associates to tend to those who linger in areas, and communicates loyalty points and promotions.

MPact offers major advantages to facilitate mobile marketing to deliver the best possible service for the customers, and at the same time maximize income potential for the enterprise, be it a hotel chain or a retail establishment.

- **Unequaled Value** - MPact helps in identifying where the customer is inside the facility, and delivers the most personalized service possible with very low costs.

- **Unification of WiFi and Bluetooth® Smart Locationing** - MPact is the only platform in the industry to offer a single system with end to end locationing visibility and analytics on unifying both WiFi and Bluetooth Smart technologies.

- **Unbelievably Easy Deployment** - MPact platform deployment enables administrators to deploy, access and act on locationing analytics data in the same day.

- **Comprehensive Locationing Services** - MPact offers three different levels of locationing services based on presence, zone and aisle level positions.

- **Support for Public and Private Cloud** - MPact provides deployment flexibility by having the server, either on the cloud or on the premises, based on business needs.

1.1 MPact Architecture

The MPact architecture is comprised of the following:

- *MPact Beacons*
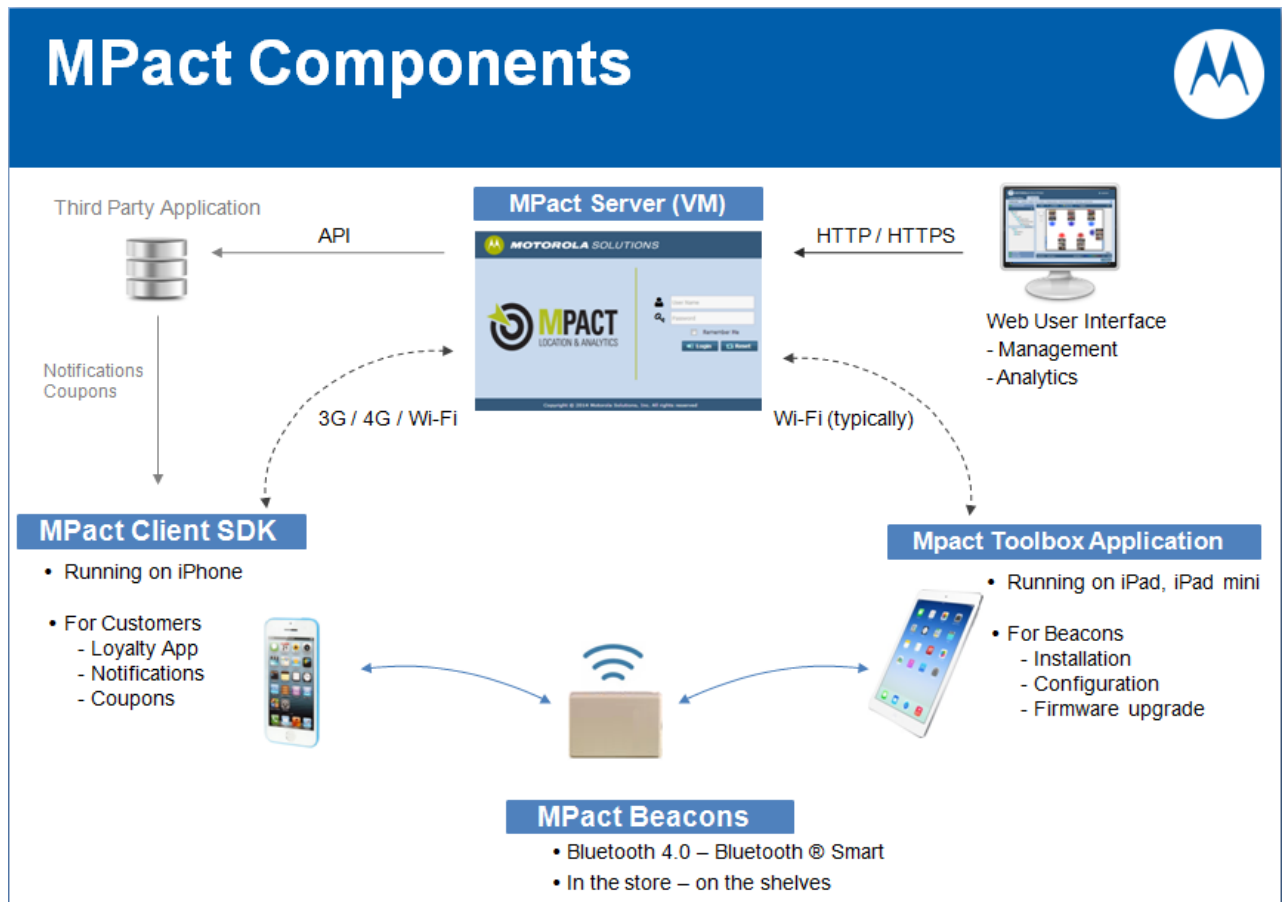- *MPact Server*
- *MPact Toolbox*
- *MPact Client SDK*

Figure 1-1 *MPact Components*

1.1.1 MPact Beacons

Our Bluetooth® Smart beacons can operate in various modes including iBeacon™. Beacons enable the next level of customer engagement by providing real-time location triggers and notifications, prompting shoppers to access privileges offered by the retailer.

> ✓ **NOTE:** Battery information is not available if using iBeacon mode. This guide assumes the beacon is in *Battery Save* or *MPact* mode.

Beacon placements can be adjusted within a deployment floor plan, and depending on the mode selected, their battery life can be tracked over time. Administrators can cursor over a beacon on a site's floor plan to assess remaining battery life.

1.1.2 MPact Server

MPact Server provides an interface to install and maintain MPact beacons throughout the deployment site. The server software utilizes an analytics infrastructure and locationing API.

MPact Server receives its beacon data from client devices moving about a retail environment. The beacon identifier is compared to other beacon identifiers mapped to a specific location (accomplished using the MPact management UI). When a match occurs, the MPact Server can either place the mobile client within a store or place the mobile client in close proximity to specific products. The mobile client's location, the beacon's proximity to specific products, and the beacon's remaining battery life are all stored on the MPact Server's local database for administrative retrieval and analysis.

The MPact Server application manages the MPact infrastructure and administrative framework. The MPact Server UI configures site floor plans required for beacon placement and locationing, manages the association of beacons with specific products, supports beacon installation and maintenance and provides the visualization and analytics needed for both mobile clients and beacons.

1.1.3 MPact Toolbox

The MPact Toolbox is an iPad application designed for easy beacon deployment and management. During a typical MPact installation, an iPad is carried within a retail area to scan each beacon's barcode during deployment. The handheld can also validate existing beacon functionality at any time. An administrator can add, modify or delete beacons and beacon positions on a site's floor plan on the toolbox. Beacon updates are pushed to the MPact Server. For more information on the toolbox, refer to the *Motorola Solutions MPact Location & Analytics Toolbox Reference Guide.*

1.1.4 MPact Client SDK

The MPact Client SDK is a client library and is available in both IOS and Android versions. The client SDK integrates directly into an application and allows it to listen for Bluetooth Smart transmissions. Upon receiving a beacon emission, the client library sends relevant information to the MPact Server. If the client receives data from more than one beacon within a given interval, the utilized beacon is based on a beacon selection algorithm distributed between the client and the server. Communication between the client library and the MPact Server is secured through SSL. For more information, see *Motorola Solutions MPact Location & Analytics Software Development Kit* available at *https://portal.motorolasolutions.com/Support/ US-EN/Wireless+Networks*.

1.2 System Hardware and Software Requirements

This section lists the minimum hardware and software requirements to install and run MPact Server.

1.2.1 Browser Support

MPact server requires the following browser support:

- Internet Explorer version 11 or above
- Google Chrome version 33 or above
- Mozilla Firefox version 26 or above

1.2.2 Server Hardware Minimum Requirements

MPact Server is a Linux-based system. As a prerequisite to installing MPact Server, ensure the server has the following capacity:

- 4 Cores
- 8 GB RAM
- 200 GB Disk space
- Operating System (OS): Debian 7.3 (Use Console Mode in Debian, not GUI mode)
- Display resolution minimum is 1024 x 768 pixels

1.2.3 Server Hardware Requirements for Larger Deployments

- 24 Cores
- 35 GB RAM
- 1 TB Disk space
- Operating System (OS): Debian 7.3 (Use Console Mode in Debian, not GUI mode)
- Display resolution minimum is 1024 x 768 pixels

1.3 Toolbox, SDK and Server Communication

Figure 1-2 illustrates communications between MPact Toolbox, the SDK, and MPact Server, as well as the client application to the MPact Server. The Toolbox requests information stored on the Server, for example, tree hierarchy, floor plans, and beacon positions. As deployment changes are made in the Toolbox, the Toolbox updates the Server.
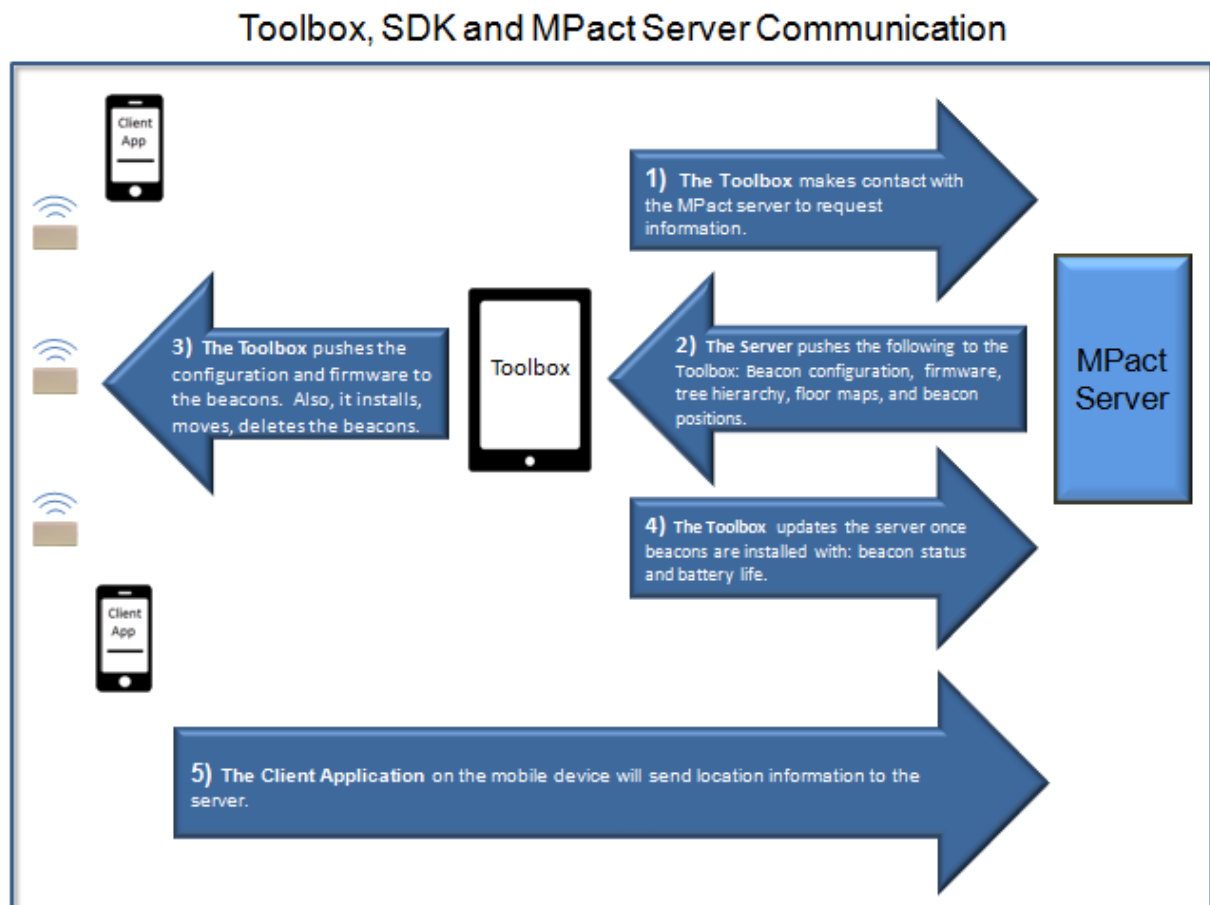
Figure 1-2 *MPact Toolbox, SDK and MPact Server Communication*

CHAPTER 2 LOCATIONING

Use **Locationing** to review trending customer data. **Dashboard Insights** provides information on new and returning customer visits to sites, as well as time spent engaging with specific products, by site and collectively for the system. **Dashboard Health** displays information on remaining battery life for beacons by site and collectively for the system. **Active View** is a a real-time visualization tool for both client tracking on a floor plan and the beacons reporting their whereabouts. Use this information to assess the effectiveness of product categorizations and beacon placements within specific deployments.

For more information, refer to the following:

- *Dashboard Insights*
- *Dashboard Health*
- *Active View*
- *User Tracking*

2.1 Dashboard Insights

Dashboard Insights trend customer data for specific products as well as collectively for site-wide deployments. A tree displays as a hierarchical set of sites and floors collapsible under the main **System** node.

It's important to be able to differentiate customers from one another based on their frequency and repeat visits. Keep the following in mind when administrating customer data:

- *Unique Customer* - A client is considered unique if seen for the first time in the last 30 days. A unique customer detected by MPact always constitutes a unique visit, but not all unique visits translate to unique customers.

- *Repeat Customer* - A repeat customer is one who has been detected more than once in the last 30 days. These customer analytics are calculated based on the last 30 days, even if the system has been running for more than 30 days. MPact uses the last 30 days of data collection as the average.

- *Unique Visit* - A unique visit occurs when a client is seen for the first time at a location. If the client is seen again after 2 hours, it is considered as a new visit again.

The site Tree Hierarchy contains Expand and Collapse options (on the top, left-hand side) allowing an administrator to shift the tree display from a hierarchal structure to a list of peer sites with no hierarchy. The tree is ranked by customer counts detected within a site.

To administrate site and system wide customer trending:

1. Select **Insights** under the Locationing main menu.
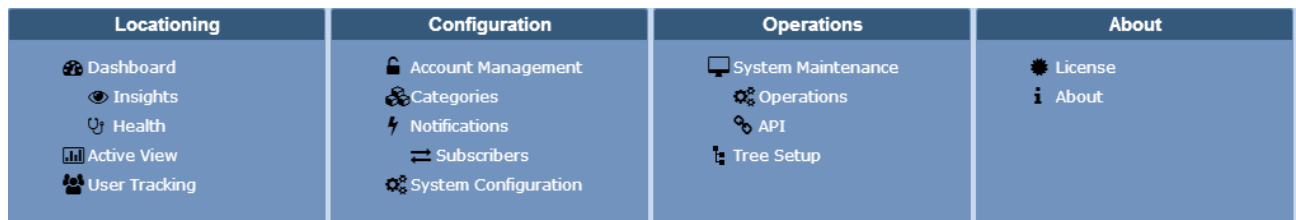
Figure 2-1 *MPact Main Menu - Dashboard Insights*

2. Select the top level **System** node from the tree on the left-hand side of the screen.

   Insights update every two hours, based on the system clock (12:00, 2:00, 4:00 etc.). Refresh actions are captured within these update intervals. After the MPact Server is loaded, the dashboard shows data as of the last analytics update.

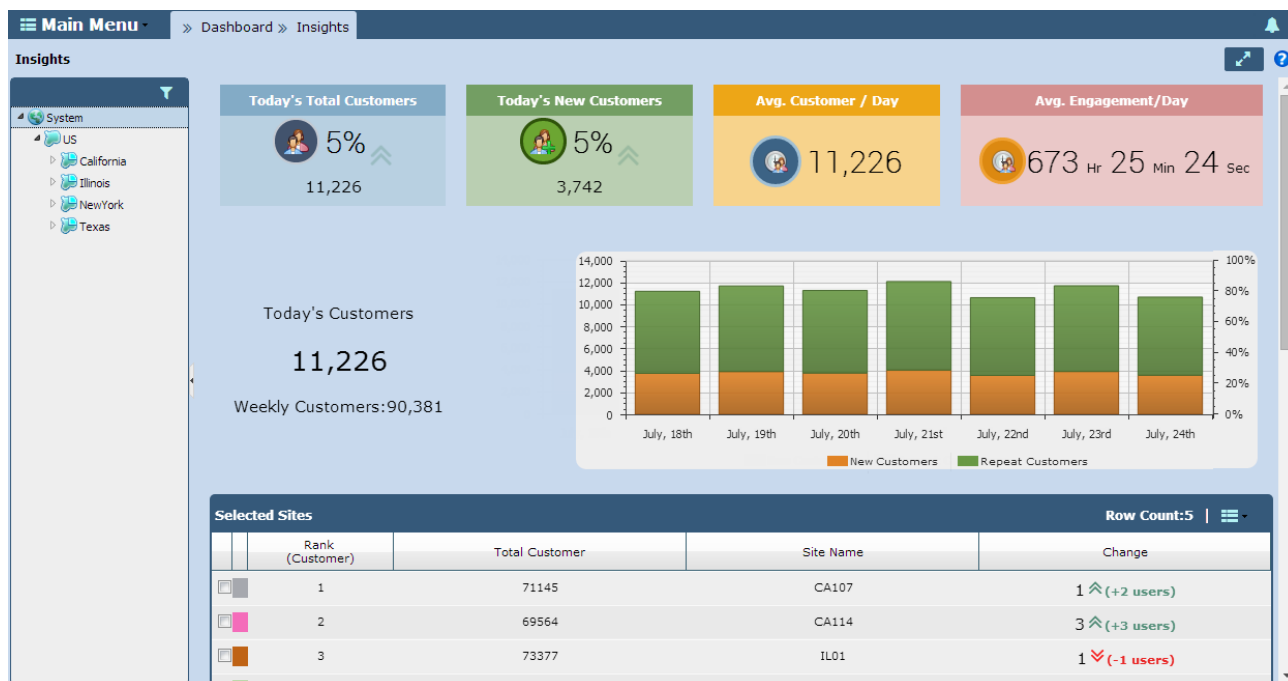Figure 2-2 shows analytics for all sites within the MPact managed system.

Figure 2-2 *MPact Dashboard Insights*

The top row displays four summaries listing customer data collected from all sites within the MPact managed system.
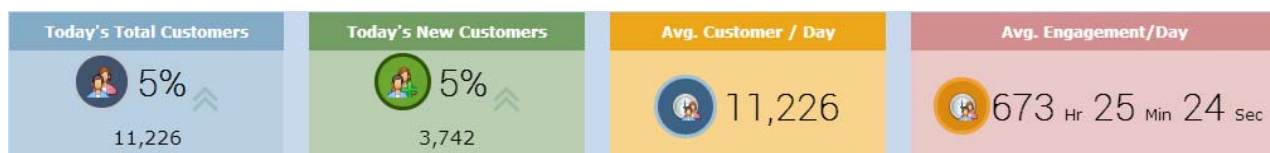

Figure 2-3 *MPact Dashboard Insights - Summaries*

3. Refer to the following summary information:

Today's Total Customers	Lists the total customer count (both unique and repeat) across all sites for the current day. A percentage of change (arrow) displays the increase (green arrow) or decrease (red arrow) of customers visiting sites from the previous day.
Today's New Customers	Lists the total new customer count across all sites for the current day. A percentage (arrow) displays the increase or decrease of new customers visiting the sites from the previous day.
Avg. Customers / Day	Displays the average number of customers visiting sites within the system per day. A percentage of change displays the increase or decrease of customer activity from the previous day. Use this information to assess whether customer activity is trending upward or downward in respect to changes to product activity and new beacon placements.
Engagement / Day	Represents the average time customers are engaged near a product's beacon on a per day basis, in hours, minutes, and seconds, across all sites. Administrators should consider dwell time an important indicator of beacon placement efficiency.

The **Today's Customers** and **Weekly Customers** graphs (on the right-hand side of the display) shows customer trends for new and repeat customers.

- *Today's Customers* - Total customer count across all sites for the current day (both unique and repeat customers).
- *Weekly Customers* - Lists the total count of unique and repeat customers across all sites for the past seven days, including the current day.

Figure 2-4 *MPact Dashboard Insights - Customer Trends*

2.1.1 Selected Sites

Use the **Selected Sites** table to display trending information for sites within the system. This information can be filtered and displayed within a graph.

1. Scroll to the **Selected Sites** table to review trending data for MPact sites within the system.

2. Use the drop-down menus for each column to filter data in ascending or descending order. Additionally, use the check boxes to select which columns to display, including *Rank, Total Customer, Site Name* or by *Change*.

3. Scroll to the **Selected Sites** table.

Figure 2-5 *MPact Dashboard Insights - Selected Sites*

The **Row Count** on the right displays the site count, and further to the right the **Display Filter** icon lists site filtering options.

4. Select the **Display Filter** drop-down menu to view site filtering options.

   The filter displays information **1 Week** or **1 Month**, includes filtering up to the top fifteen or bottom ten sites, and displays information by **Customers** or **Dwell Time** spent within a product category. Column selections vary depending on the choice for **Customer Visibility**.

Figure 2-6 *MPact Dashboard Insights - Display Filter Options*

5. Refer to the following **Display Filter** options:

View By	Use the drop-down menu to set incremental data for one week or one month.
Show By	Use the arrows to select up to the top fifteen or the bottom ten ranked sites for display.
Customer Visibility	Set *Customer Visibility* for either of the following: • *Customers*: Shows users occupying the site at a given time. • *Dwell Time (Engagement)*: Shows users occupying the site based on their dwell time.

6. Use the drop-down menus to the right of each column to sort and filter the display columns. Options for columns are similar, based on previously selected **Display Filter** options. Select a column's drop-down menu to sort data in an ascending or descending order and select display headings.

Figure 2-7 *MPact Dashboard Insights - Selected Category Column Sort Options*

7. Review to the following site data column options:

Rank (Engagement/ Customer)	Lists each site's numeric rank, amongst either the top 15 or bottom 10 sites in respect to either *Engagement* (dwell time in minutes and seconds) or the number of *Customers* (users). Selections are made from the *Display Filter* drop-down menu.
Engagement	Lists the average duration (in hours, minutes and seconds) customers have dwelled (remained) at each site for the selected filter time, either one week or one month.
Total Customers	Lists the total customer count for a particular site for either one week or one month, including the current day (includes unique and repeat customers). The default is 7 days.
Category	Lists the names of either the top 15 categories or bottom 10 categories where high/low levels of user traffic are detected and reported. Use this information to assess whether improved product categorization or adjustments in beacon placements would increase dwell times for poorly performing sites.
Change (Engagement/ Customer)	Lists a percentage increase or decrease in customer or engagement activity for either the top 15 or bottom 10 sites listed for the selected filter time. The difference in customers/ engagement is also listed numerically on the right, with a green or red arrow indicating the positive (green) or negative (red) direction the information is currently trending.
Site Name	Lists the name of either the top 15 or bottom 10 customer sites where high/low levels of user traffic are detected and reported. Use this information to assess whether improved product categorization or adjustments in beacon placements would increase dwell times for poorly performing sites.
Total Customers	Displays the total number customers reporting beacon hits at each listed site over the last week or month.

8. Select one or more sites in the table using the check boxes in the left-most column to display site trends.

    Make changes to the graph using filtering options and site selections. To remove the graph, deselect the check boxes for the site.
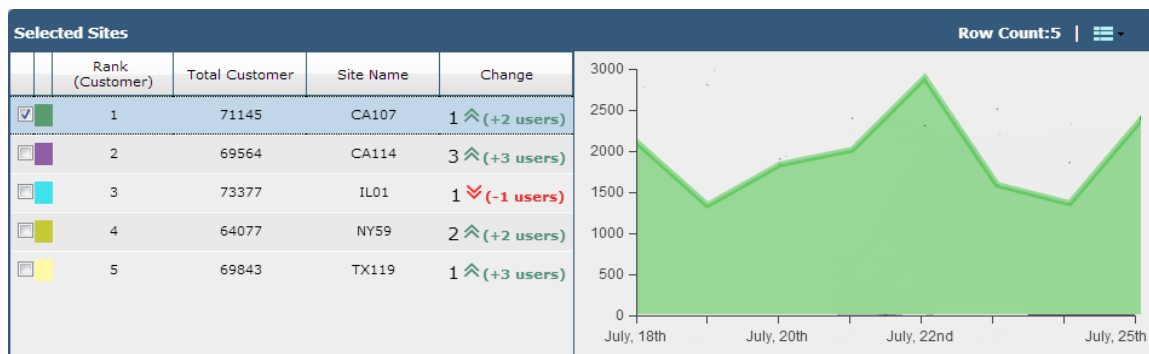

Figure 2-8 *MPact Dashboard Insights - Trends for Selected Sites*

2.1.2 Selected Category

Refer to the **Selected Category** table to review category characteristics based on filter selections, column sorting, and trending data options.

To sort and filter table data:

1. Scroll to the **Selected Category** table.

Figure 2-9 *MPact Dashboard Insights - Selected Category Table*

2. Refer to the following site data:

Rank (Engagement/ Customer)	Lists each site's numeric rank, amongst the top 15 or bottom 10 sites in respect to either *Engagement* (dwell time in minutes and seconds) or the number of *Customers* (users). Selections are made from the *Display Filter* drop-down menu.
Engagement	Lists the average duration (in hours, minutes and seconds) customers have dwelled (remained) at each site for the selected filter time, either one week or one month.
Total Customers	Lists the total customer count for a particular site for either the past week or month including the current day (includes unique and repeat customers). The default is 7 days.
Category	Lists the names of the top fifteen categories (or bottom ten categories) where high levels of user traffic are detected and reported. Use this information to assess whether improved product categorization or adjustments in beacon placements would increase dwell times for poorly performing sites.
Change (Engagement/ Customer)	Lists a percentage increase or decrease in customer or engagement activity for either the top 15 or bottom 10 sites listed for the selected filter time. The difference in engagement/ customers is also listed numerically on the right, with a green or red arrow indicating the positive (green) or negative (red) direction the information is currently trending.

The **Row Count** on the right displays the site count, and further to the right the **Display Filter** icon lists site filtering options.

3. Select one or more sites in the table, using the check boxes in the left-most column, to display a graph of trends.
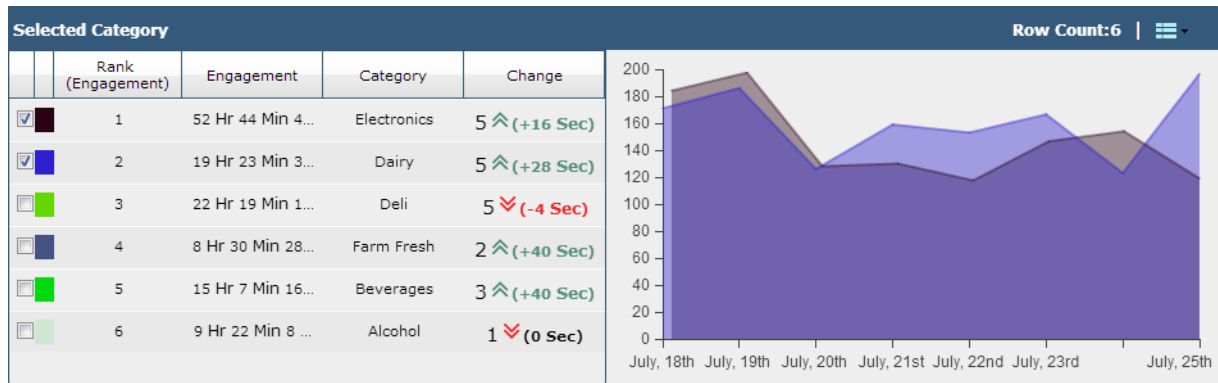

Figure 2-10 *MPact Dashboard Insights - Selected Category Graph*

The graph in Figure 2-10 shows the **Display Filter** settings for the selected sites and corresponding data in the table. Make changes to the graph using filtering options and site selections. To remove the graph from display, deselect the check boxes.

2.1.3 Category Values

Use the **Category Values** table to review category value characteristics for the system, select **Display Filter** options and view a graph of this information.

To sort and filter table data:

1. Optionally scroll to the Category Values table and select category value characteristics based on filter selections, column sorting, and trending data options.

Figure 2-11 *MPact Dashboard Insights - Category Values Table*

The graph in Figure 2-12 shows **Category Values** for the **Electronics Category** drop-down selection.
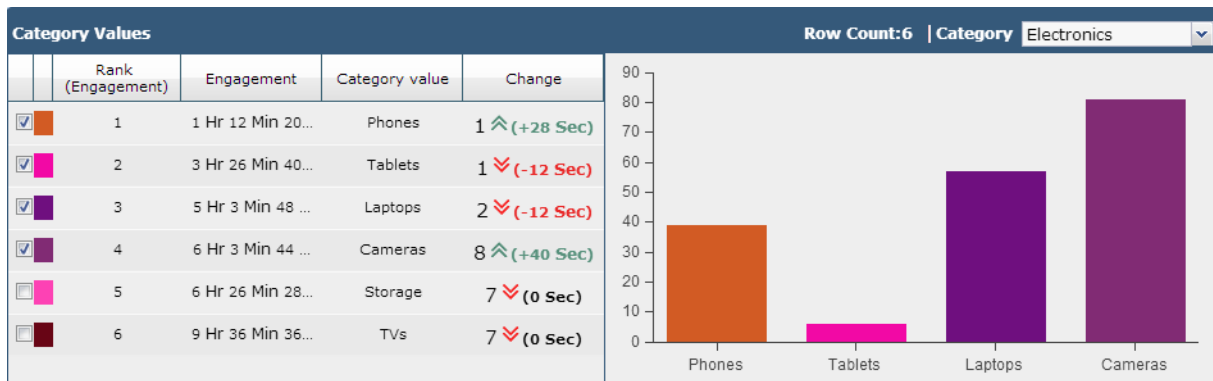
Figure 2-12 *MPact Dashboard Insights - Category Values Graph*

2.1.4 Site Trends and Ranking

Select a site level node from the tree to display customer trends for the specific site.

The **Current Customers** graph shows the total of new and repeat customers for the site for each day over a week. These totals also display as a percentage of total users for the site.
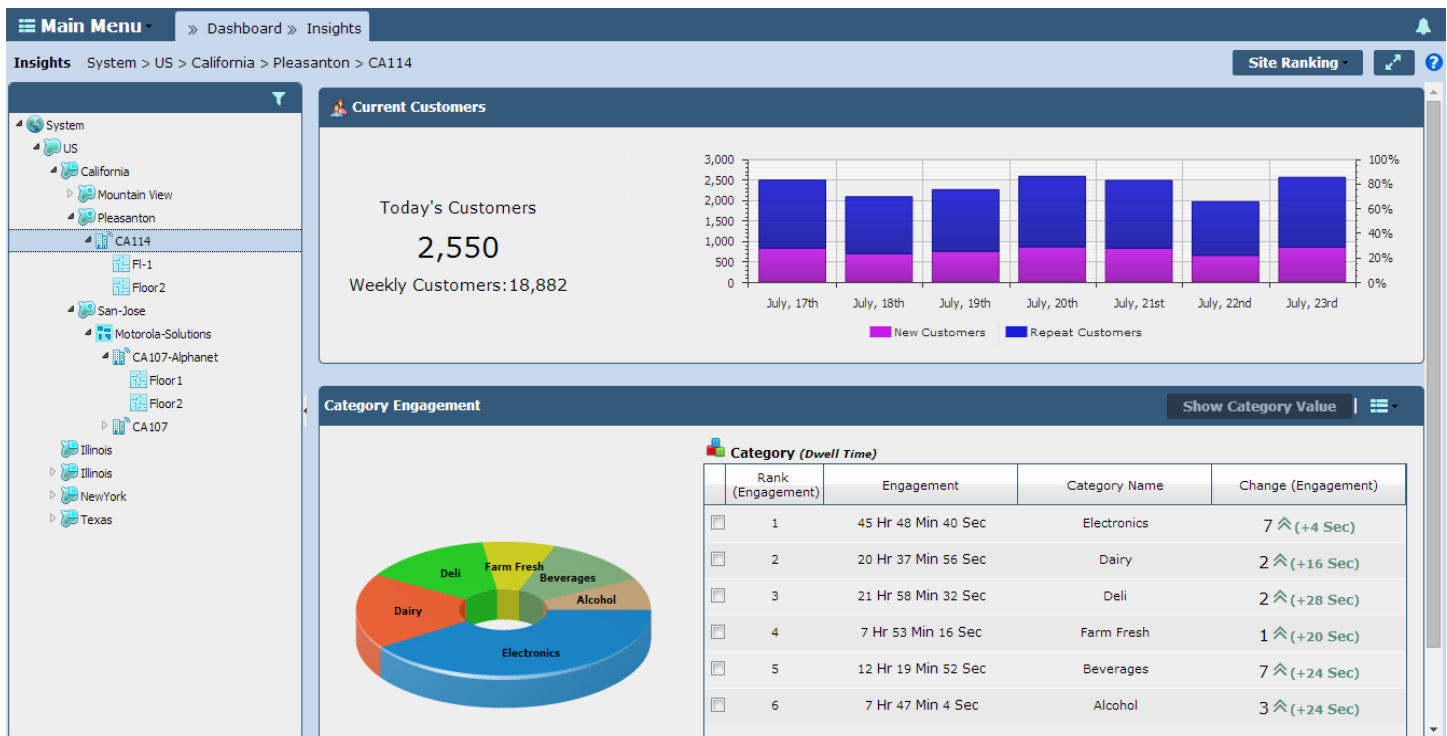
Figure 2-13 *MPact Dashboard Insights - Site Trends*

1. Select the **Site Ranking** button in the upper-right corner to display the rank with respect to **Customers** and **Engagement** for all sites in the system.

Site Rank by Customers includes both new and repeat customers. **Site Rank by Engagement** is based on average dwell times for a site and compares individual sites to all sites in the system. The ranking is based on the last week, showing whether the volume has increased or decreased.
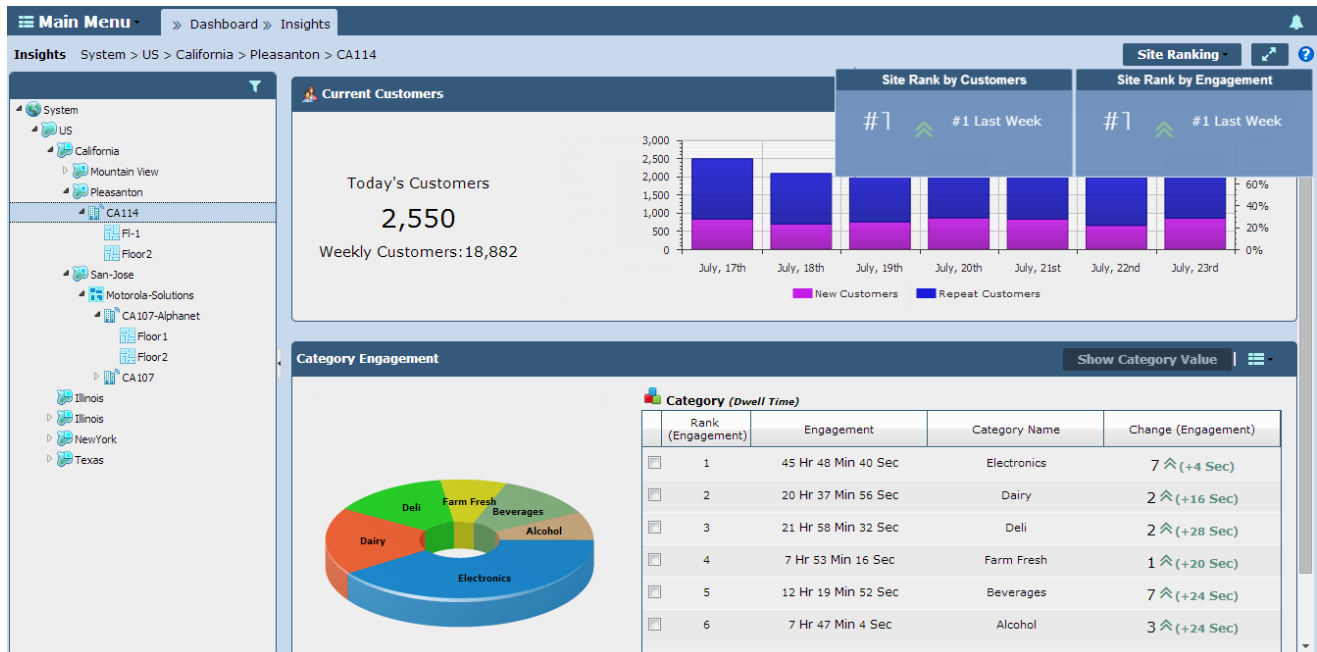
Figure 2-14 *MPact Dashboard Insights - Site Ranking*

2.1.5 Category Engagement

Optionally scroll to the **Category Engagement** table and select category value characteristics based on filter selections, column sorting, and trending data options.

- Select a category to show its **User Count**.
- Select **Show Category Value** on the top right-hand side of the toolbar to either show or hide values.
- Select boxes in the left-most column to display **Category Engagement** user trends over a week.

To display Category Engagement trends:

1. Select one or more check boxes in the left-most column to graphically display customer trends over time.
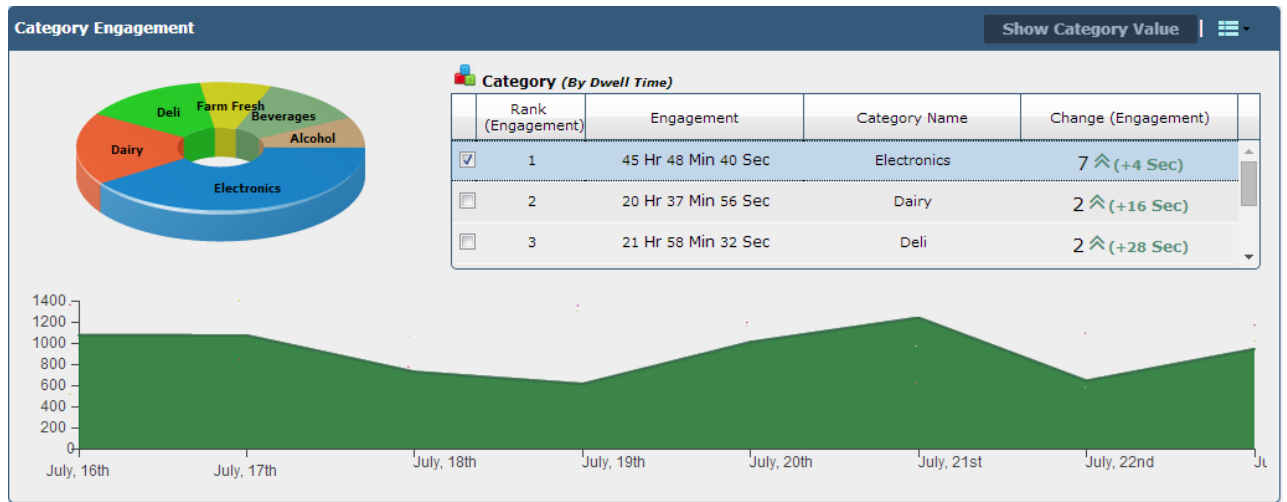
Figure 2-15 *MPact Dashboard Insights - Site Category Engagement Trends*

2. Use the **Display Filter** drop-down menu to refine the display as needed.

   Figure 2-16 shows the top three categories by **Customers** over a one week period, as selected using the **Display Filter**.
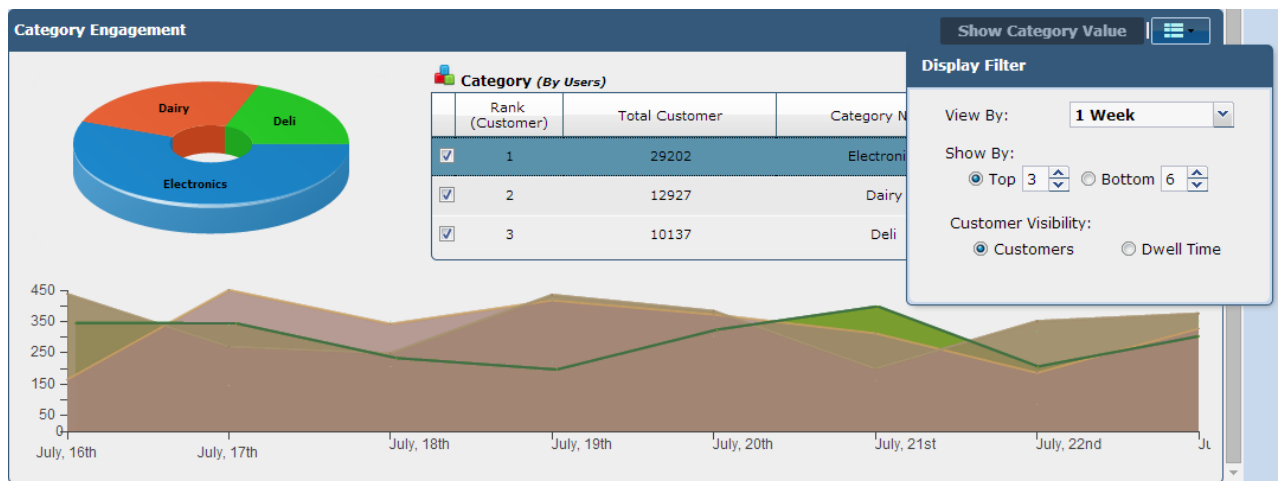
Figure 2-16 *MPact Dashboard Insights - Site Category Engagement Trends*

2.1.6 Other Insight Features

The features mentioned in this section are available on many of the screens within MPact Server. The lists may differ, but the functions are the same.

Tree Hierarchy filtering is available by selecting the filter icon. Select check box items to filter and display list items in the hierarchy, which may include *country, country region, city, site,* and *floor.* Select the filter icon a second time to close the drop-down check box menu.
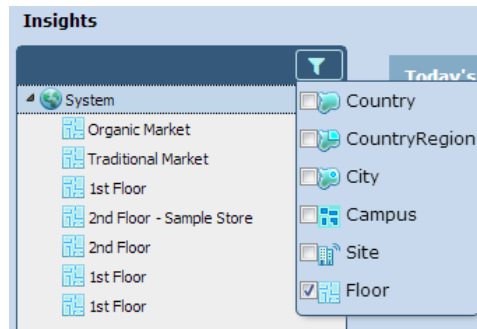

Figure 2-17 *MPact - Filtering*

Select the **Bell** icon in the upper right area of the main screen to enable and disable error notification pop-ups. When enabled, error notifications are visible for only a few moments within a popup dialog to the left of the bell.

Figure 2-18 *MPact - Error Notification Icon*

Select the **Enlarge Screen** icon in the upper right area of the main screen to enlarge the viewing area of the screen. Close the tree and headings, and enlarge the screen to encompass the area when selected. Select the X in the upper-right corner to display the original view of the screen.

Figure 2-19 *MPact - Enlarge Screen Icon*

Select the question icon to launch the MPact server online help system.

Figure 2-20 *MPact - Online Help Icon*

Select **Sign Out** from the **superuser** drop-down menu in the upper right area of the main screen to sign out of MPact Server.
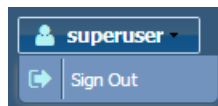
Figure 2-21 *MPact - Sign Out Icon*

2.2 Dashboard Health

Dashboard **Health** displays information about the beacon's remaining battery life, and the number of missing and mis-placed beacons for the entire MPact system or selected site (the health display is not available at the floor level). The system and site health views data at different levels of granularity. Dashboard Health analytic functions update every six hours.

> ✓ **NOTE:** There is no battery reporting for the iBeacon format on the *Health Dashboard*. A blue pie chart displays for iBeacon format, however, no battery information displays.

To administrate MPact Dashboard Health tracking capabilities:

1. Select **Health** under the Locationing main menu.

2. Select the **System** node within the left-hand menu tree.

   Dashboard Health information displays collectively for all sites within the MPact managed system.
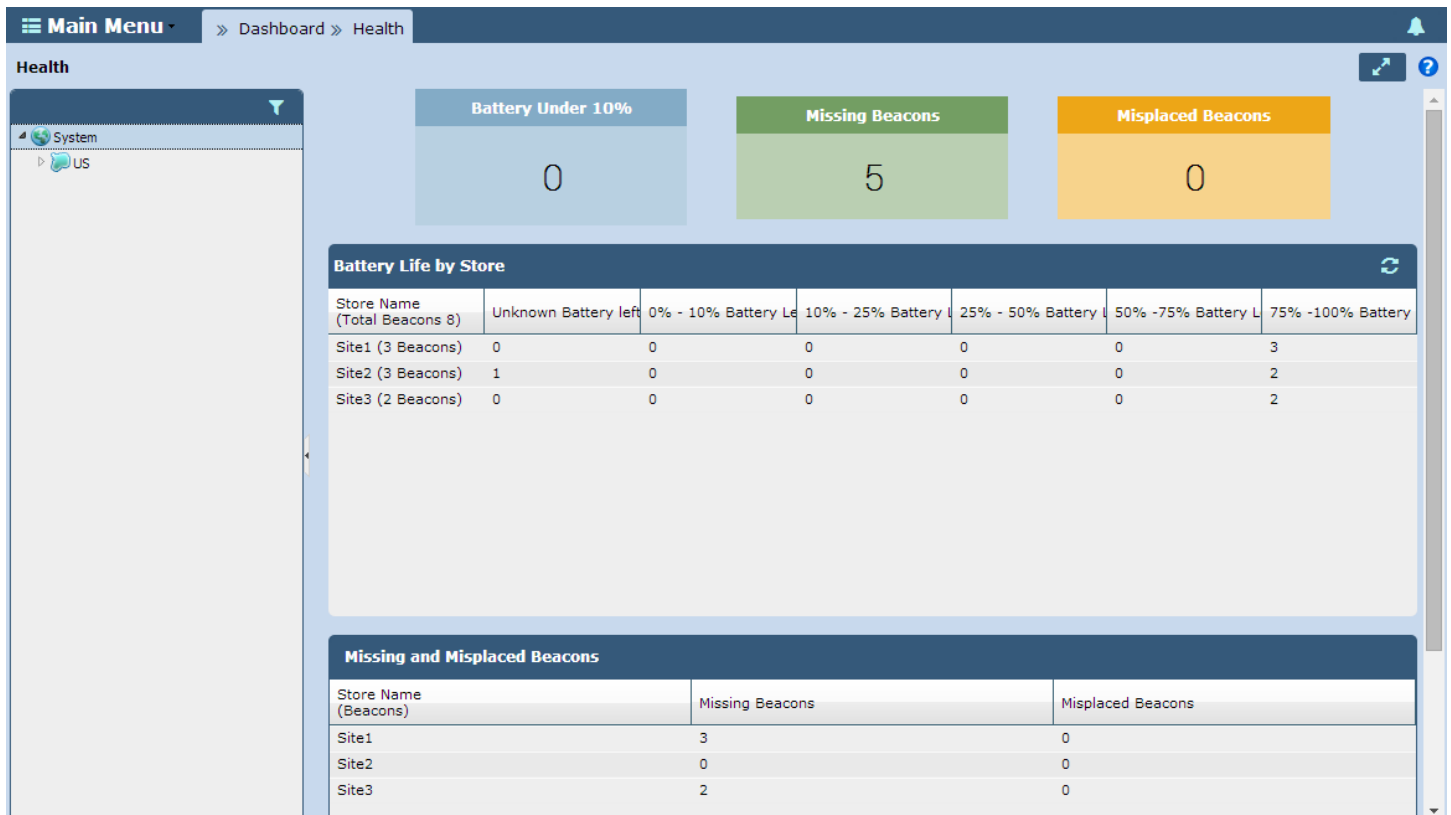
Figure 2-22 *MPact System Dashboard Health*

3. Refer to the top row to troubleshoot the following beacon information:

Battery under 10%	Displays the total number of beacon batteries with less than 10% battery life remaining. Use this information to prioritize beacon replacements to ensure the system remains fully supported with optimally powered beacons.

Missing Beacons	Displays the total number of missing beacons in the MPact managed system. Missing beacons are beacons that have not been heard from within a 48 hour period. They might have been properly installed, scanned and placed on a site's floor plan, but are unaccounted for when trending beacon data from that target's site.
Misplaced Beacons	*Installed Beacon IDs* must match the Planned Beacon ID. If there is a mis-match, the beacon is flagged as a Misplaced Beacon.
	When the Planned Beacon ID is not specified, then system assumes that Installed Beacon is the correct one and does not raise a Misplaced flag for that beacon.

4. Refer to the **Battery Life by Store** table to review summary battery life information for the top six sites (by user count) and assess whether specific sites warrant beacon replacements and administration:

Store Name	Lists the name of the store provided by the administrator when the site was provisioned with a floor plan and beacons were strategically placed, based on product categories.
0% - 10% Battery Left	Displays the number of beacons for each listed store with a battery life between *0% and 10% Battery Left*. This beacon should be prioritized for immediate replacement. Each store may have been provisioned with beacons at different times, so this information is helpful to filter specific stores from the entire system that require battery replacements.
10% - 25% Battery Left	Displays the number of beacons for each listed store with battery life between *10% and 25% Battery Left*. This beacon should be queued for replacement no later than one week. Each store may have been provisioned with beacons at a different time, so this information is helpful to schedule specific stores for battery replacements.
25% - 50% Battery Left	Displays the number of beacons for each listed store with battery life between *25% and 50% Battery Left*. This beacon should be scheduled for replacement, but no immediate action is warranted.
50% - 75% Battery Left	Displays the number of beacons for each listed store with battery life between *50% - 75% Battery Left*. This beacon should be considered a relatively new deployment with no battery replacement either prioritized or scheduled.
75% - 100% Battery Left	Displays the number of beacons for each listed store with battery life between *75% - 100% Battery Left*. This beacon should be considered a new deployment with no battery replacement either prioritized or scheduled.

5. Use the drop-down menus for each table column to filter data in ascending or descending order.
    Determine which columns to display by selecting the appropriate check box for the level of battery life.

Figure 2-23 *MPact Dashboard Health - Battery Life by Store, Column Sort Options*

✓ **NOTE:** Each column has similar *column sort* options (ascending, descending, column headings) for all table columns within *Dashboard Health*.

6. Scroll to the **Misplaced and Missing Beacons** table to view the number of missing and misplaced beacons for selected store sites.

Figure 2-24 *MPact Site Dashboard Health - Missing and Misplaced Beacons*

7. Refer to the following **Missing and Misplaced Beacons** table for more information:

Store Name	Lists the name of the store provided by the administrator when the site was provisioned with a floor plan and beacons were strategically placed, based on product categories.
Missing Beacons	*Missing Beacons* have been properly installed, scanned and placed on a site's floor plan, but are unaccounted for when trending beacon data from that site. No data is represented at the system or site-level Analytics or in the Health section.
Misplaced Beacons	*Misplaced Beacons* are detected in the MPact managed system, but are not reporting accurately since they have not been properly placed on a site's floor plan.

2.2.1 Site Level Dashboard Health

Dashboard Health at the site level displays the percentage of battery life for each beacon and estimates the number of days of remaining useful life for each beacon on the site.

To administrate MPact Dashboard Health tracking capabilities at the site level:

1. Select a **Site** node within the left-hand menu tree. Dashboard Health information displays collectively for the selected site.
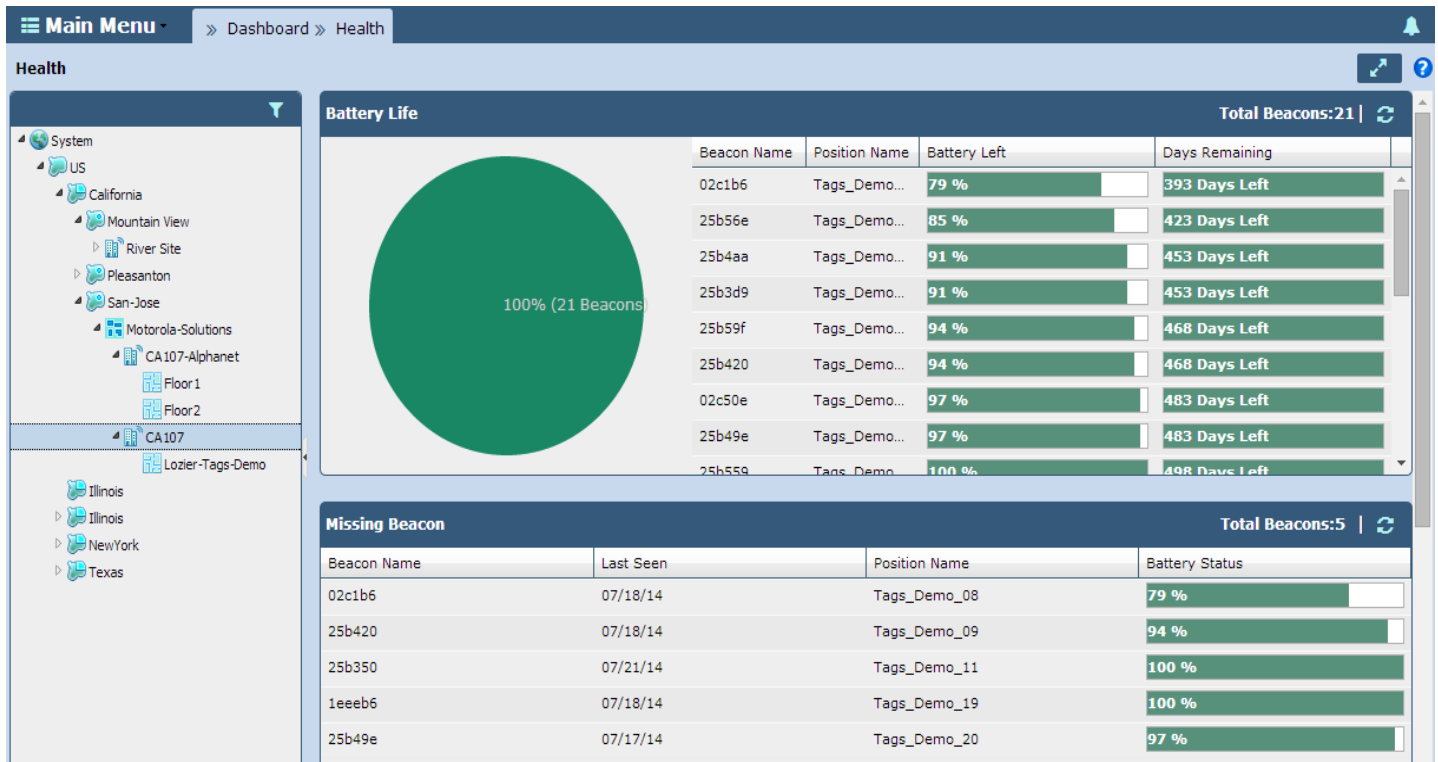

Figure 2-25 *MPact Site Dashboard Health - Site Health*

2. Refer to the **Battery Life** table to assess individual beacon health in respect to remaining to remaining days of operation.

Beacon Name	Refer to the Battery Life field to assess individual beacon health in respect to remaining useful life and days of remaining operation projected.
Position Name	Lists the Position Name used to secure a beacon's physical position on a site map. The Position contains the beacon's X-axis and Y-axis coordinates, well as the beacon's direction and antenna pattern.
Battery Left	Displays a percentage representing the listed beacon's remaining battery life. Use this information in combination with the Days Remaining value to prioritize beacon replacements.
Days Remaining	Lists each beacon's projected useful operation, based on the beacon battery's consumption to date. Use this information to help prioritize the selected site's beacon replacements.

3. Scroll to the **Missing Beacons** table to assess deployed beacon health for a store.
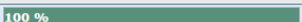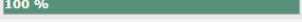
Figure 2-26 *MPact Site Dashboard Health - Missing Beacons*

4. Refer to the following **Missing Beacons** field to assess the attributes of incorrectly installed beacons:

Beacon Name	Lists each beacon's numeric ID assigned uniquely to each beacon upon its installation using the iPad resident toolkit application.
Last Seen	Displays a timestamp of when each missing beacon was last detected by the MPact Server.
Position Name	Lists the name used to secure a beacon's physical position on a site map. The position contains the beacon's X-axis andY-axis coordinates on a deployment site map as well as the beacon's direction and antenna pattern.
Battery Status	Displays a percentage representing the missing beacon's remaining battery life. Use this information to assess whether the site's missing beacon's are at risk of going offline completely. Battery life is represented by the following colors: • *Green*: Indicates there is between 40% < = 100% remaining beacon battery life. • *Yellow*: Indicates there is between 20% < = 40% remaining beacon battery life. • *Red*: Indicates there is between 0% < = 20% remaining beacon battery life.

5. Scroll to the **Misinstalled Beacons** table to assess whether there are deployed unaccounted for beacons when viewing the site. A Misinstalled Beacon is one in which there is a discrepancy exist between the Planned Beacon and the Installed Beacon.

A Beacon is considered mis-installed if the following is true:

• Planned Beacon ID is empty

• Planned Beacon ID does not match Installed Beacon ID

Figure 2-27 *MPact Site Dashboard Health - Missinstalled Beacons*

6. Refer to the following **Misinstalled Beacons** field to assess the attributes of incorrectly installed beacons:

Position Name	Lists the name used to secure a beacon's physical position on a site map. The name contains the beacon's X-axis and Y-axis coordinates on a deployment site map as well as the beacon's direction and antenna pattern.
Planned Beacon	Contains the Planned Beacon ID.
Installed Beacon	Contains the Installed Beacon ID deployed at the Position.
Reconcile	Shows an actionable icon when the Planned and Installed Beacon IDs do not match. When a user clicks on the button, it automatically converts the Planned Beacon ID to an Installed Beacon ID. Thus removing the dependency of mis-installed beacon.

Upon selecting the **Reconcile** icon, the **Planned Beacon** ID becomes equal to the **Installed Beacon** ID and the misplaced beacon is found.

Figure 2-28 *MPact Site Dashboard Health - Beacon Reconciliation*

2.3 Active View

The MPact *Active View* provides a single location where administrators can navigate to beacon deployments, view status in a customized way, view beacons and users on a floor plan, and launch management tools. The MPact framework is hierarchical and distributed, with potentially thousands of beacons and users accessible from a single management point.

The Active View is a a real-time visualization tool for both client tracking on a floor plan and the beacons reporting their whereabouts. The display can be toggled on and off (so only clients, beacons or both display). An Active View can be displayed for the entire MPact *system*, a selected *site* or a *floor plan*.

To administrate the MPact Active View:

1. Select **Active View** under the Locationing main menu item.

Figure 2-29 *MPact Dashboard - Active View*

Active View displays a global map (at the system level) depicting the MPact system's geographic site deployment. Use the feature to navigate to a site deployment location of interest. Unplaced Sites display within a sub-screen at the top left of the geographic map. Unplaced sites can be selected and dragged from the screen and placed at their appropriate deployment locations within the system or site levels.
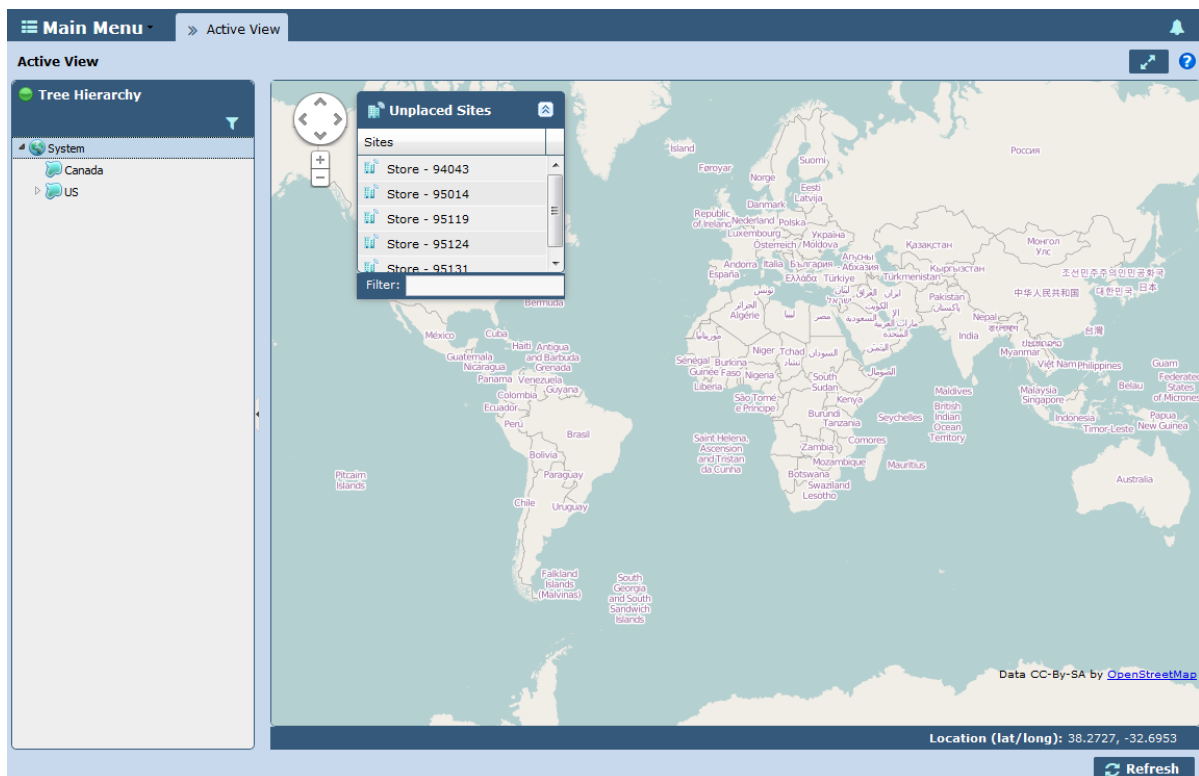

Figure 2-30 *MPact Active View - Geographic Map*

2. Use the zoom feature to increase (+) or decrease (-) the size of the GPS map, or use the arrows (within the circle) to move to the right, left, up or down to navigate to a site deployment location. When a site is selected, a hand displays within the zoom circle to allow the administrator to display the initial default setting.

Figure 2-31 *MPact Dashboard - Zoom Navigation*

In addition to the zoom feature, the mouse can also be used to navigate by left-clicking on a GPS map area and dragging the map up, down, right, and left to view an area. The roller on the mouse can be used to zoom in and zoom out of the map from any level of the hierarchy. The zoom feature automatically zooms in on locations as selections are made from the hierarchy system level, to the county, city, and site levels.

3. Use the **Tree Hierarchy** to expand the **System** nodes and navigate to a site deployment location.

    Unplaced Sites display within a sub-screen at the top left of the display at both the system and site levels (not within a floor level). Unplaced sites can be dragged to their appropriate location on the GPS map. While site placement on a map is optional, placing a site serves as a visual tool for the administrator.

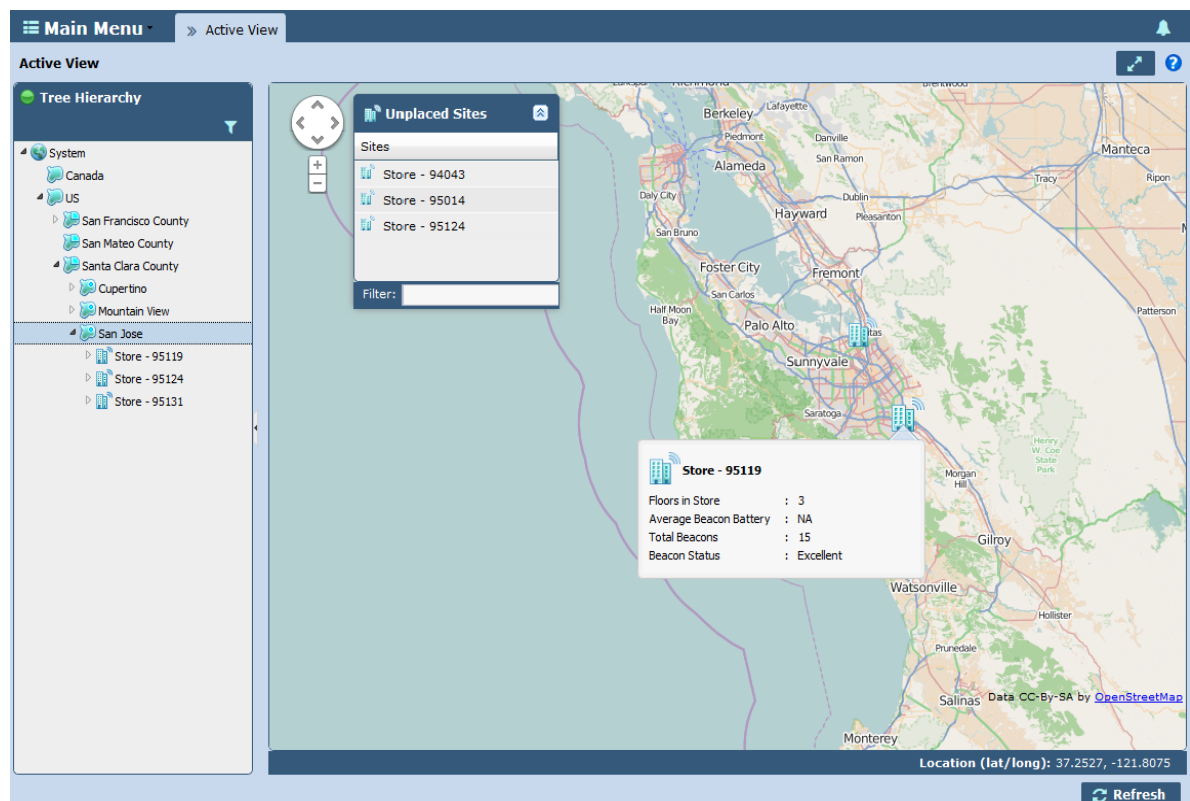   Cursor over a site to display summary location information about the store.

Figure 2-32 *MPact Active View - Tree Hierarchy and Site Placement*

4. Select the **Views** drop-down menu at the site level to hide or show GPS map view, 3D stack view, and floor views for the selected site.

When an individual floor plan is selected, its corresponding location displays in the tree on the left-hand side of the screen. However, selecting the 3D view from the tray displays the site level on the tree.
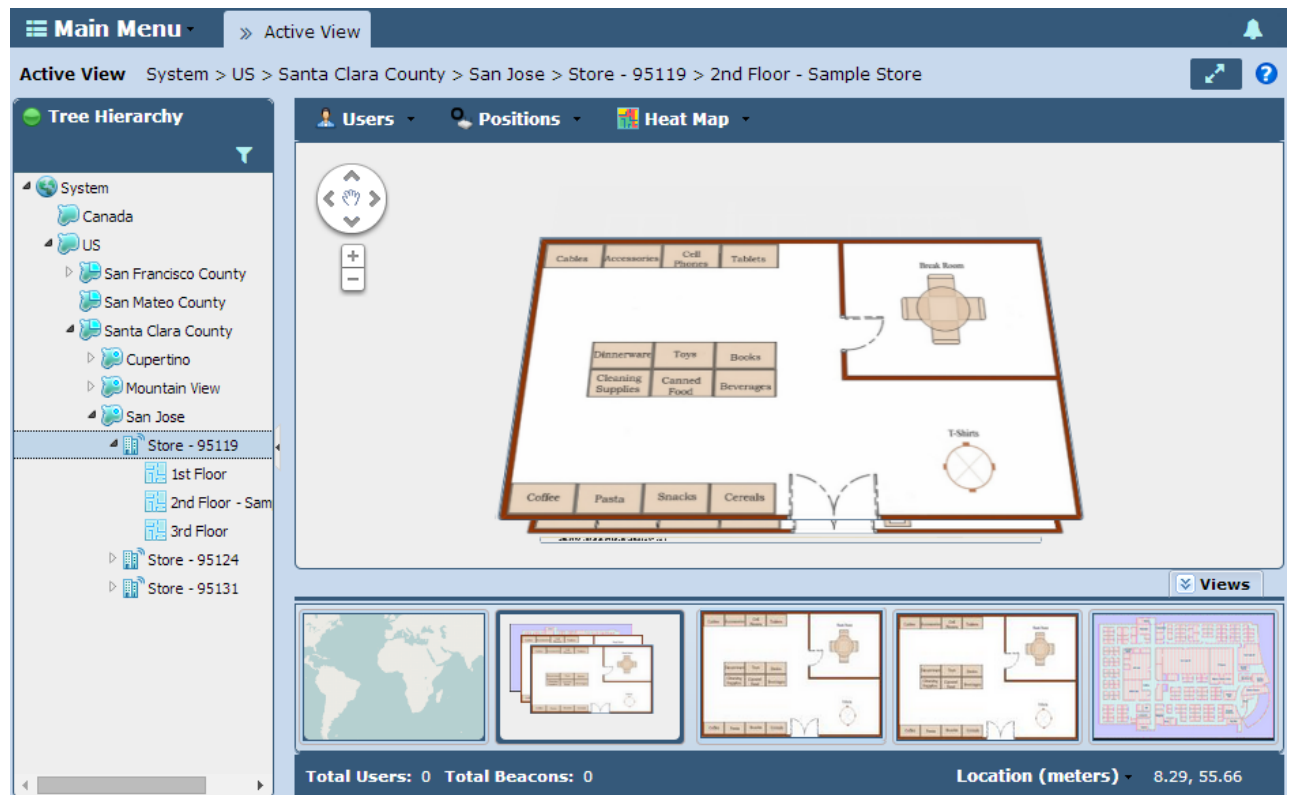

Figure 2-33 *MPact Active View - 3D Stack View*

3D stack view is available for sites having more than one floor plan. Use the cursor to drag the 3D stack in a circle, up or down, right or left to view the floors from any angle.

NOTE: 3D stack view is not supported in Internet Explorer.

5. Expand the **Tree Hierarchy** and select an existing floor deployment, or select a floor from the **Views** tray.
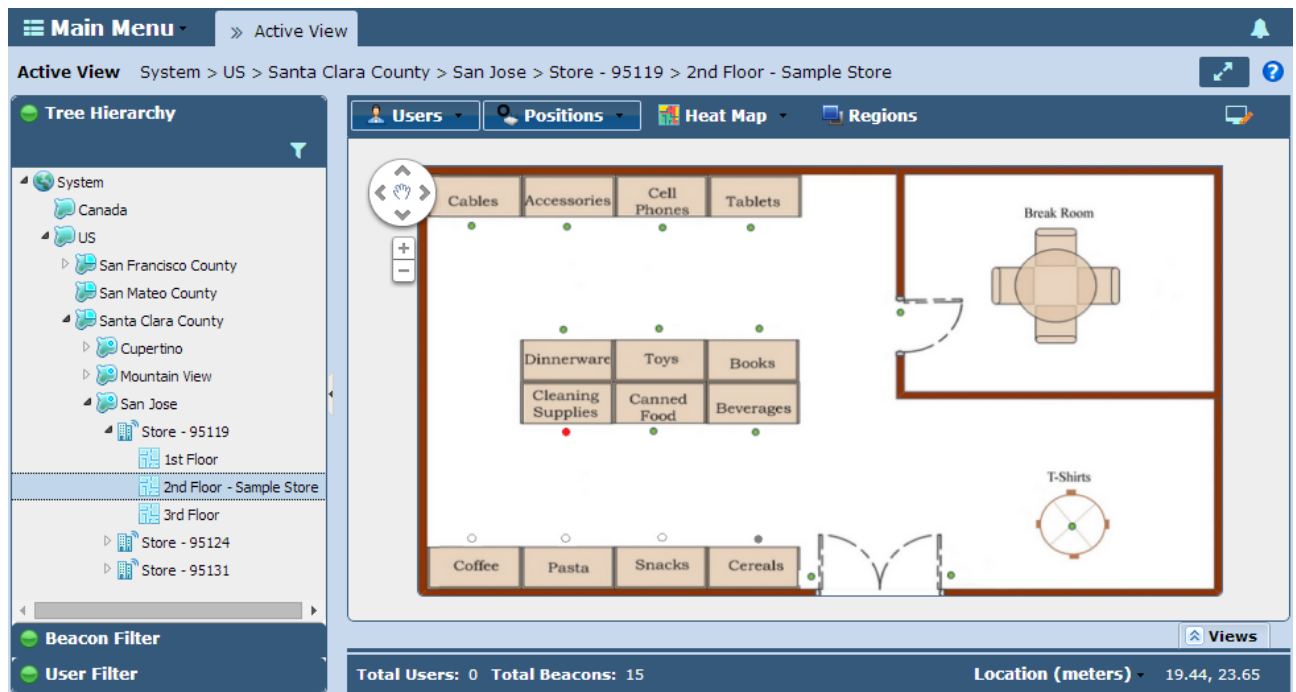

Figure 2-34 *MPact Active View - Floor View with Deployed Beacons*

Figure 2-34 shows beacons in various stages of deployment on a floor. Beacon placements can be visually assessed and modified as required.

6. Refer to the following for beacon position assessment:

○	*Empty* – Represents a position with no beacon installed.
⬤	*Gray* – Represents a position with a beacon installed that is inactive.
🟢	*Green* – Indicates there is between 40% < = 100% remaining beacon battery life.
🟡	*Yellow* – Indicates there is between 20% < = 40% remaining beacon battery life.
🔴	*Red* – Indicates there is between 0% < = 20% remaining beacon battery life.

7. Other information at the bottom of the screen includes:

- **Total Users** Displays the total number of users currently on the floor.

- **Total Beacons** Displays the total number of beacons currently in the floor.

- **Location** Defines whether floor measurements are displayed in **meters** or **feet**.

2.3.1 Users

Use the **Users** button to display current users populating a selected site's floor, as seen in Figure 2-35 in blue and pink. View either **BLE** or **Wi-Fi** type user movements on the floor over a 24 hour period to see which product areas are most frequented and for how long.
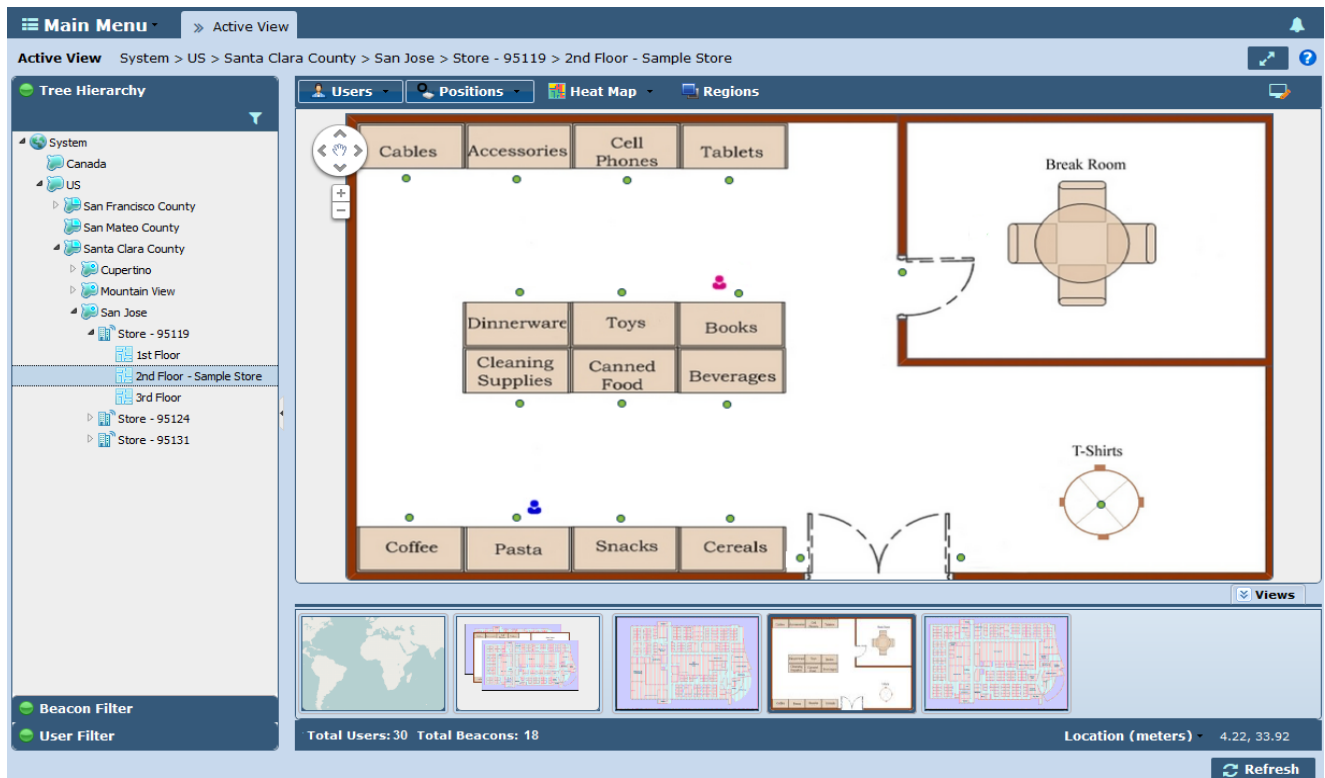

Figure 2-35 *MPact Active View - Users*

To view user movement information:

1. Select the **Users** button.

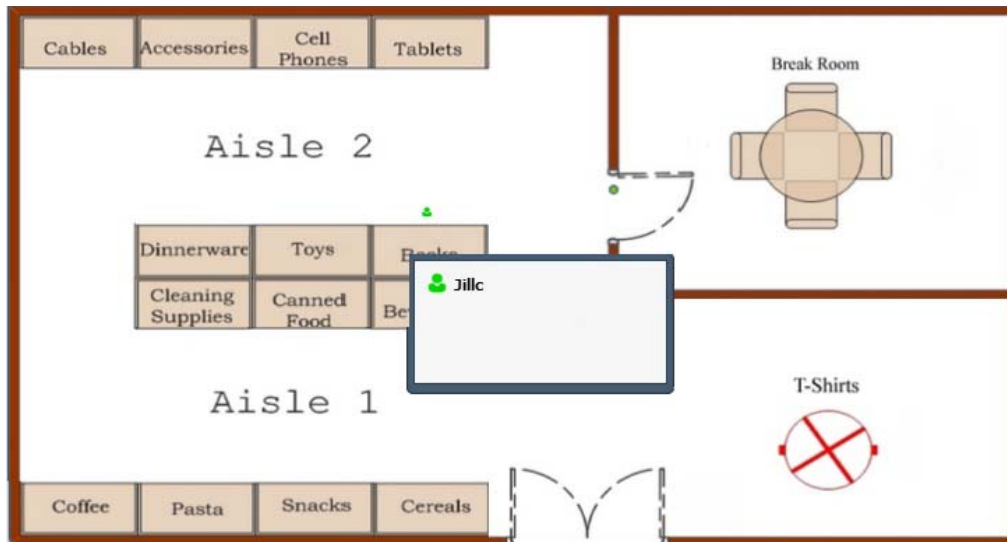2. Cursor over a user on the floor to display the user's name associated with the mobile device.

Figure 2-36 *MPact Active View - Users*

2.3.2 Positions

Use **Positions** to secure a beacon's physical location on a site floor plan. **Positions** contains the beacon's X-axis and Y-axis coordinates, the beacon's direction and antenna pattern, and product categories and category values assignment, which is included in Dashboard analytics. Product *Categories* and *Category Values* are assigned to a beacon's position, which allows *Subscribers* to receive *Notifications*. For more information, see *Notifications*.

When placing beacon positions on the floor plan, ensure the beacon's position is located with respect to the selected product category. For example, beacon positions can be strategically placed on end caps, aisle entrances, and at seasonal promotional displays.

To place and configure a position on a floor plan:

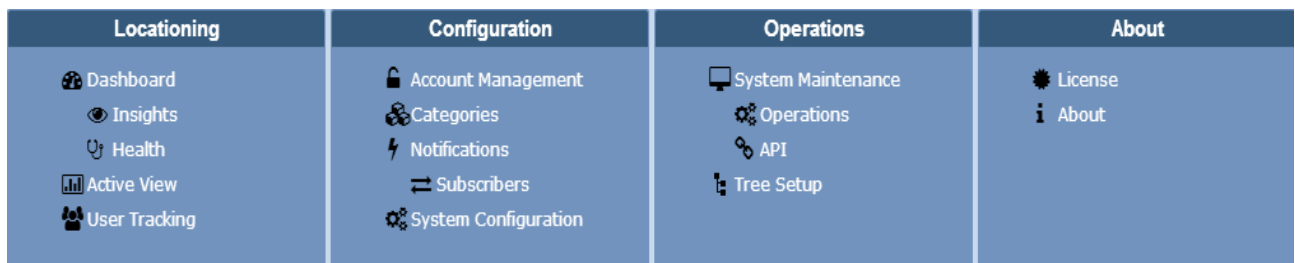1. Select **Active View** under the Locationing main menu item.

Figure 2-37 *MPact Server - Active View*

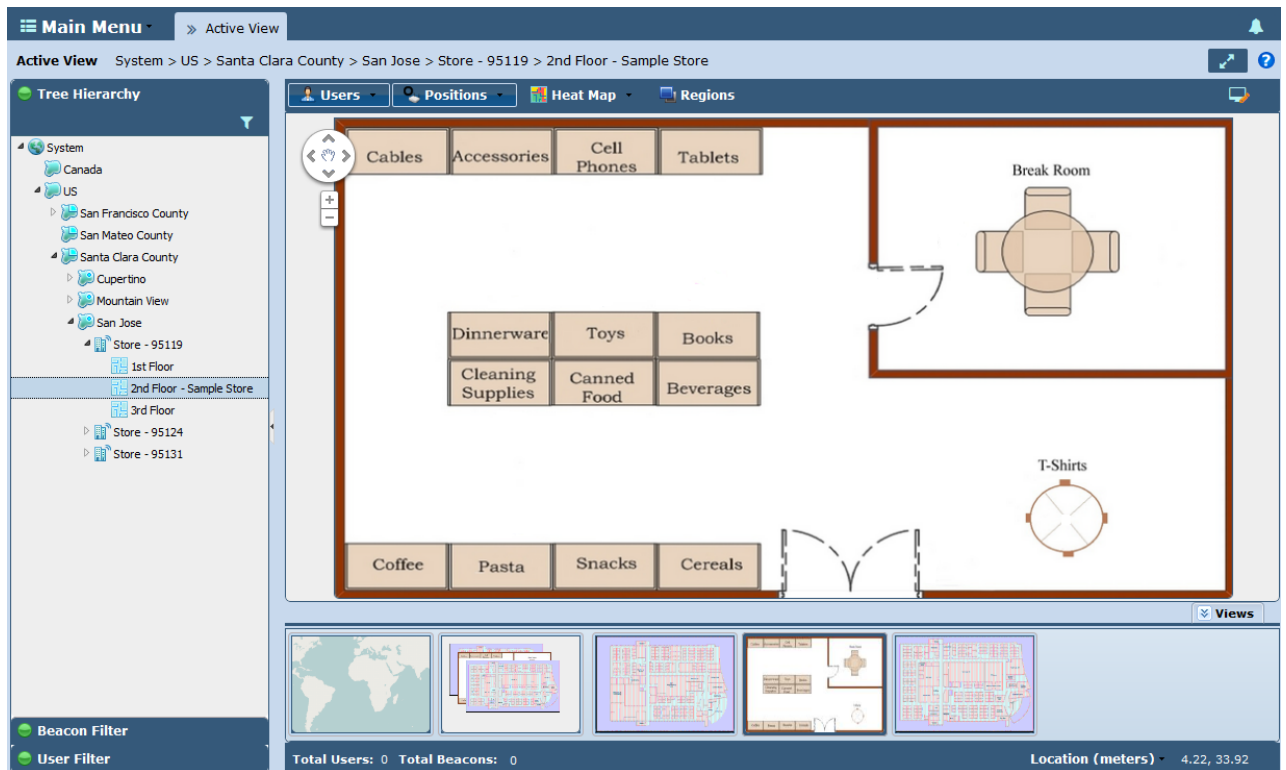2. Select a deployment floor plan from the **Tree Hierarchy**.

Figure 2-38 *MPact Server - Active View Floor Plan*

3. Select the **Edit Mode** button on the far-right of the toolbar to expand toolbar options.

4. Select the **Positions** drop-down menu:

Select Beacon Positions	Select an existing beacon position on a site's floor plan.
Select Device Position	Select an existing device position on a site's floor plan.
Select Floor Regions	Select an existing floor region (enclosed boundary) on a site's floor plan.
Add Position	Adds a new position on a site's floor plan.
Add Region	Adds a new region on a site's floor plan.

5. Select **Add Position** from the **Positions** drop-down menu.
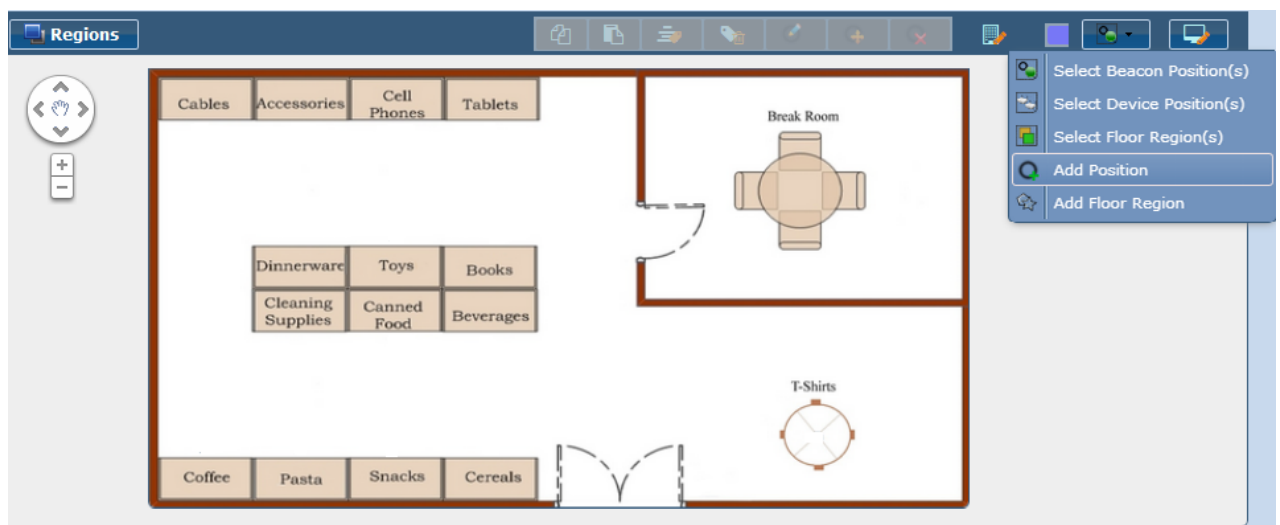

Figure 2-39 *MPact Server Active View - Add Position*

6. Double-click on the beacon's intended position on the floor plan.

The **Add Position** dialog box displays auto-populated with the position's **X-axis** and **Y-axis** coordinates on the floor plan. Select **Position Categories** for the **Accessories** category and **Batteries** category values. These are used to assign notifications to customers for product promotions.

Figure 2-40 *MPact Server Active View - Position Configuration*

7. Refer to the following configuration options:

Position Name	Generates a time stamped number when a name is unassigned. The position name displays for battery life, missing beacons and misinstalled beacons within Dashboard Health.
Position Description	Provide a 30 character maximum description for the beacon's physical deployment location.
Position Location (meters or feet)	Auto-populated X and Y axis coordinates are relative (zero) to the upper left-hand corner of the floor plan and increase to the right (X) and down (Y) from the left-hand corner of the floor plan. The position location was auto-populated earlier by double-clicking on the location within the floor plan. Additionally, feet or meters display depending on what was selected when the floor plan was uploaded.
Beacon Configuration	*Major*: Set from 0 - 65535. A Major component for device class and a Minor component for more refined information like product category. The Major field is a field for identifying the device class. For example, the Major value could be the same for each device on the first floor or a particular department store. *Minor*: Set from 0 - 65535. In iBeacon mode, the Minor field is a field for more refined information, like product category. It consists of the last byte of the MAC address.
Position Categories	Select *Add Category* to assign a *Category* to the position (left drop-down menu displays) and select *Category Values* (right drop-down menu displays) appropriate for the beacon's position on the site floor. These selections send notifications, coupons or product information to the shopper's mobile client when the customer is browsing in the store.

Advanced Beacon Settings	Advanced beacon settings are not functional in nature, they change nothing on the beacon itself. They serve only as a visual aid within Active View.
	Antenna Pattern: Use this drop-down option to determine how the Heat Map displays for a beacon. The Heat Map displays in either 180 or 360 degree orientations for a semi-ellipse or circle shape.
	Planned Beacon: Use this option for deployment scenarios where users want to install specific Beacon IDs at specific locations. In such scenarios, this Planned Beacon ID is compared to the actual Installed Beacon ID. If there is a mis-match, it is highlighted under the Analytics section.
	Degrees: Controls how Heat Maps are displayed for a beacon. The option is applicable only for the semi-circle antenna pattern. The default, 0 degrees, displays the Heat Map toward the east, 90 degrees toward the south, etc. Based on the value set, the orientation of the Heat Map changes accordingly.
	Beacon Offset: Determines how far from a beacon the user icon should be displayed.

8. Select **Save** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

    The newly created **Position** displays as an empty circle on the floor plan, indicating no beacon is currently assigned to the position.

9. Cursor over the **Position** to display the state of the position's information.

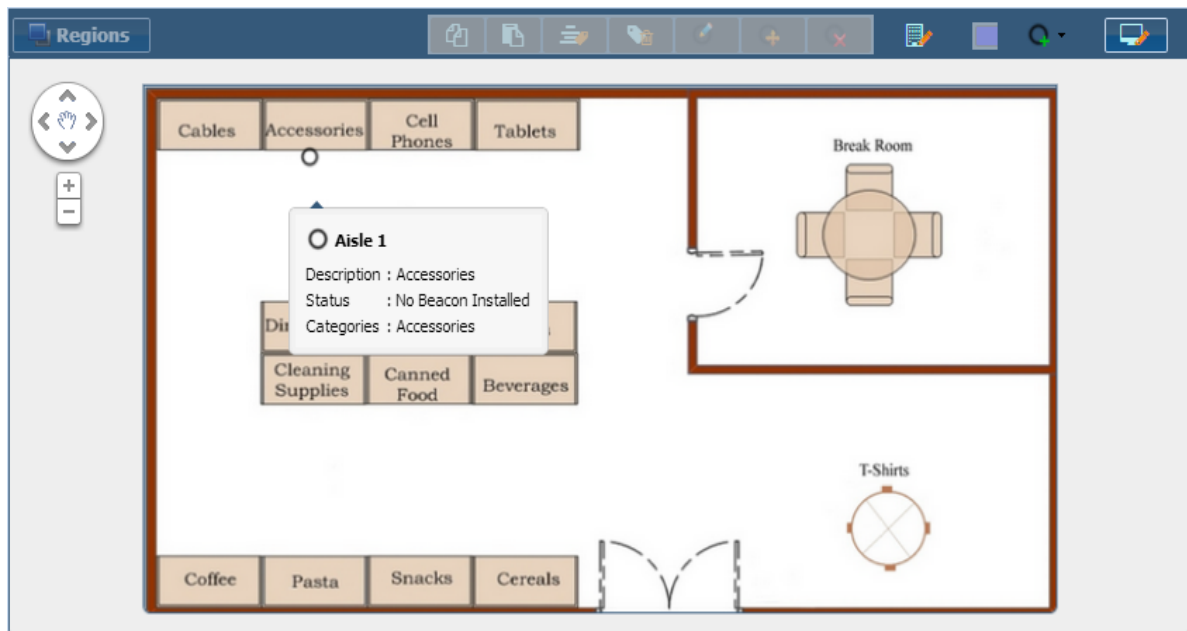**Figure 2-41** *MPact Server Active View - Add Position*

NOTE: Ensure position categories are appropriately assigned for the location.

10. Repeat this process to add more beacon positions, or copy one or more positions for mass distribution.

2.3.2.1 Position Modification

For larger deployments, positions can be copied and pasted repeatedly until there are enough positions to cover the deployment floor. When a position is copied and pasted, the pasted position has the minimum configuration and must be modified as required to reflect the correct configuration for its new location and category.

Select the **Edit Mode** button on the far-right of the toolbar to expand toolbar options. Activating **Select Beacon Positions** from the Positions drop-down adds to the choices available on the toolbar.

Figure 2-42 *MPact Server Active View - Position Edit Mode*

The following options are available on the toolbar (from left to right):

- **Copy Positions**: Copies one or more highlighted positions.
- **Paste Positions**: Pastes one or more highlighted positions.
- **Beacon Align Tool**: Adjusts the direction in which the beacon displays in *Heat Maps*, from 0-360 degrees.
- **Edit Beacon Positions**: Edits the configuration of one or more positions.
- **Move Beacon Positions**: Moves one or more positions.
- **Delete Beacon Positions**: Deletes one or more positions.

2.3.2.2 Copy and Paste Beacon Positions

Use copy and paste to create multiple beacon positions for larger deployments. When a position is copied and pasted, the newly pasted position contains the same beacon specific information, and might require editing after the newly pasted position is determined.

To copy a position:

1. Select **Active View** under the Locationing main menu item.
2. Select a deployment floor plan from the **Tree Hierarchy**.
3. Select a floor plan with one or more positions to copy, or create a new position.
4. Select the **Edit Mode** button on the far-right of the toolbar to expand toolbar options.

Figure 2-43 *MPact Server Active View - Edit Position*

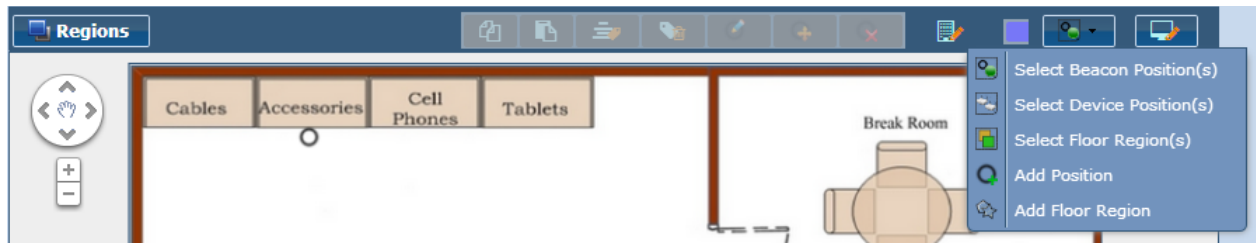5. Choose **Select Beacon Positions** from the **Positions** drop-down menu to select one or more positions.

Figure 2-44 *MPact Server Active View - Select Beacon Position*

6. Drag the cursor over one or more positions to highlight the positions.

Figure 2-45 *MPact Server Active View - Select Position*

7. From the expanded toolbar, select the **Copy** icon, then, select the **Paste** icon immediately to the right.
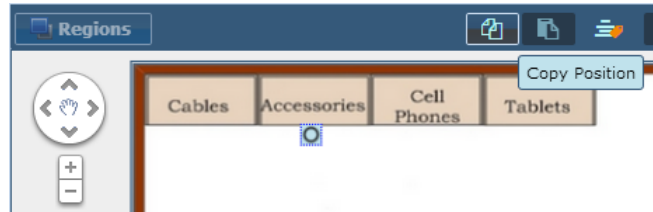

Figure 2-46 *MPact Server Active View - Copy and Paste Beacon Positions*

8. Select the **Move** icon to move the newly pasted position to its new location and category.

   Continue copying and pasting multiple icons until there are enough to cover the floor.

2.3.2.3 Move Beacon Positions

To move beacon positions:

1. Select the **Edit Mode** button from the toolbar to expand toolbar options.

2. Choose **Select Beacon Positions** from the **Positions** drop-down menu.

3. Drag the cursor over one or more positions to highlight the positions.

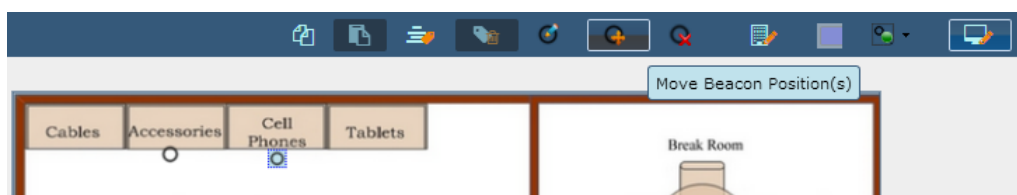4. From the expanded toolbar, select the **Move Beacon Positions** icon, then, drag the position to its new location.

Figure 2-47 *MPact Server Active View - Move Beacon Positions*

2.3.2.4 Edit Beacon Positions

Edit beacon positions anytime as floor configurations or products change.

To edit a beacon position:

1. Select the **Edit Mode** button from the toolbar to expand toolbar options.

2. Choose **Select Beacon Positions** from the **Positions** drop-down menu.

3. Drag the cursor over a position to highlight the position.

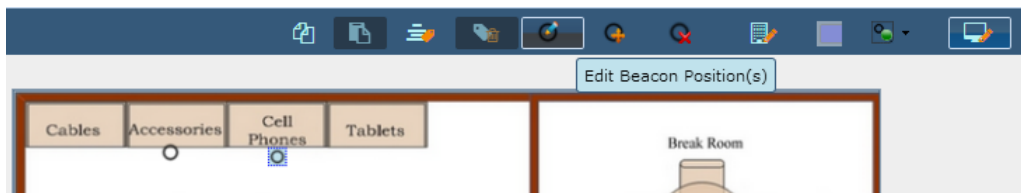4. From the expanded toolbar, select the **Edit Beacon Positions** icon.

Figure 2-48 *MPact Server Active View - Edit Beacon Positions*

5. Edit the position parameters as required.

6. Select **Save** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

2.3.2.5 Delete Beacon Positions

To delete beacon positions:

1. Select the **Edit Mode** button from the toolbar to expand toolbar options.

2. Choose **Select Beacon Positions** from the **Positions** drop-down menu.

3. Drag the cursor over one or more positions to highlight the positions to delete.

4. From the expanded toolbar, select the **Delete Beacon Positions** icon.
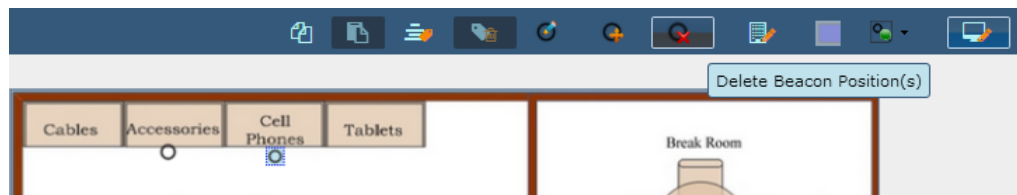

Figure 2-49 *MPact Server Active View - Delete Beacon Positions*

The **Delete Beacon Position Group** dialog box displays.
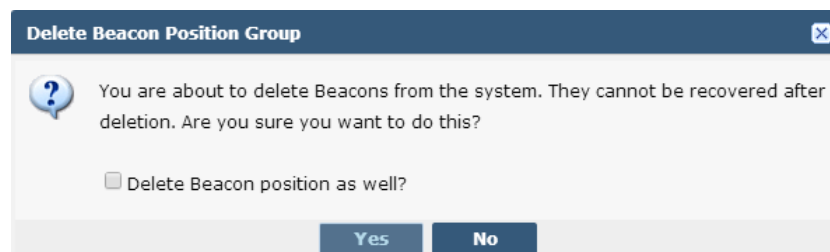

Figure 2-50 *MPact Server Active View - Delete Beacon Position Group*

5. Select **Yes** to delete only the beacon, if there is one, or select the check box for deleting the beacon position to delete both the beacon and the beacon position.

2.3.3 Heat Map

A **Heat Map** collects data over the past 24 hour period and refreshes in five minute intervals. It displays areas of heat (total number of customer visits) where user traffic is at its heaviest for adjacent beacons. Use the **Heat Map** for visualizing beacon coverage and reflecting beacon deployment. Administrators can view a graphical representation of how a floor's beacons are visited, and how customers linger in specific locations. The **Total Visits** legend at the bottom of the screen shows a color key that corresponds to the colors displayed by the beacons.

The beacon's emission direction is set from the **Position** dialog box at the time the floor plan is installed. For more information, see *Position Modification*.
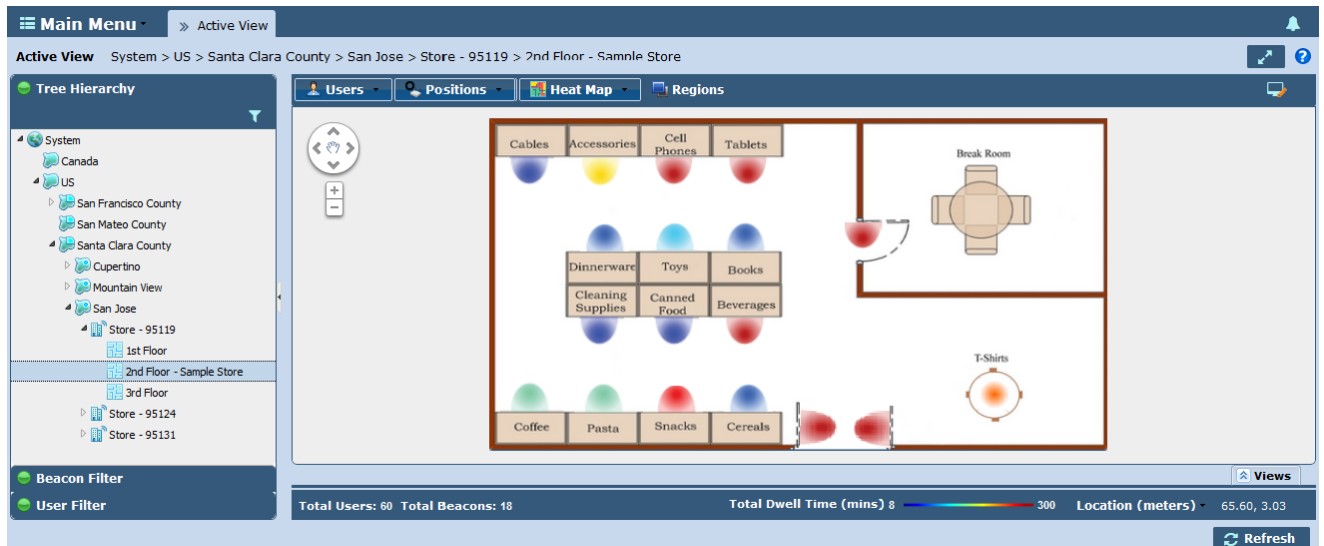

Figure 2-51 *Active View - Heat Maps*

The following Heat Map settings are available by selecting the **Heat Map** drop-down menu:

Total Visits	Displays heat (increasingly darker colors) in respect to cumulative beacon visits. In the illustration above, *Cleaning Supplies* displays a greater number of visits than *Canned Food*. If a particular product category is poorly visited amongst well visited products, it is most likely in need of placement in a new floor area adjacent to similar product categories.
Total Unique Visits	Displays heat based on the number of individual visits to beacon locations. This value does not factor in repeat visits. Thus, it can be compared to Total Visits to better assess how product categories and their beacon locations are remembered by a floor's customer traffic.
Total Dwell Time	Displays heat based on the duration customers linger (dwell) near specific beacon locations. The darker the color, the longer customers are lingering near a beacon's location. This enables administrators to assess the effectiveness of advertisements and product placements in specific areas of the retail floor.

Like other positions, placing the cursor over a position displays summary information.

2.3.3.1 Align Beacon Position Heat Map Display

Use the **Beacon Align Tool** to visually align the way a beacon displays on a Heat Map. The alignment does not affect beacon emissions, and is only a visual representation of a Heat Map's display. Settings display, based on the X-axis and moving clockwise, can be set at any degree (0-360).

> ✓ **NOTE:** Changing the beacon alignment in Active View alters the Toolbox display of the blue dot (the installer) once the beacon is installed using the Toolbox.

To align a beacon's Heat Map display:

1. Determine the direction of the heat display.

   The following **Heat Map** image displays beacons at 180 degrees, and needs to be changed to the direction where customers dwell in the aisle, in this case, at 90 degrees.
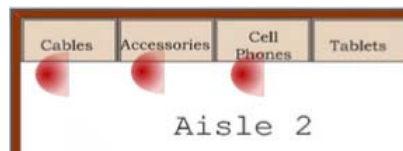

Figure 2-52 *MPact Server Active View - Beacon Alignment at 180 Degrees*

2. Select the **Edit Mode** button from the toolbar to expand toolbar options.

3. Choose **Select Beacon Positions** from the **Positions** drop-down menu.

4. Drag the cursor a position to highlight the position.

5. From the expanded toolbar, select the **Beacon Align Tool** icon.

Figure 2-53 *MPact Server Active View - Beacon Align Tool Icon*

6. When the alignment tool displays, drag the adjustment from 180 to 90 degrees to adjust the in the direction where customers dwell, toward the center of the aisle.
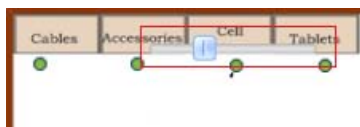

Figure 2-54 *MPact Server Active View - Align Beacon Tool Display*

7. Select the **Edit Mode** button, then, **Heat Map**, to display the intended dwell area.

   The following **Heat Map** image displays the beacon in front of the **Cell Phone** area at 90 degrees, toward the area where customers dwell.
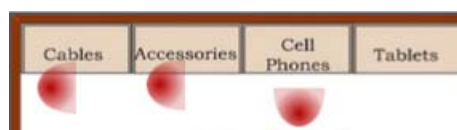

Figure 2-55 *MPact Server Active View - Beacon Alignment at 80 Degrees*

8. Make changes to the rest of the beacons as required.

2.3.4 Regions

Use **Regions** to send notifications based on activities within a defined boundary on a floor plan. A Region is a free form boundary and can be spread over a large area and fixed on the floor plan. Regions apply to beacons and Wi-fi access points. Associate regions with categories and category values to send notification and data for dashboard analytics. When activated, Notifications are sent to a Web server based on the regions configured. Regions can be configured to send notifications when a user enters or dwells in a region. For more information, see *Notifications*.

Regions are not a required setting and they can be added to a floor plan at anytime. They cannot be copied and pasted.

To add a region to a floor plan:

1. Select **Active View** under the Locationing main menu.

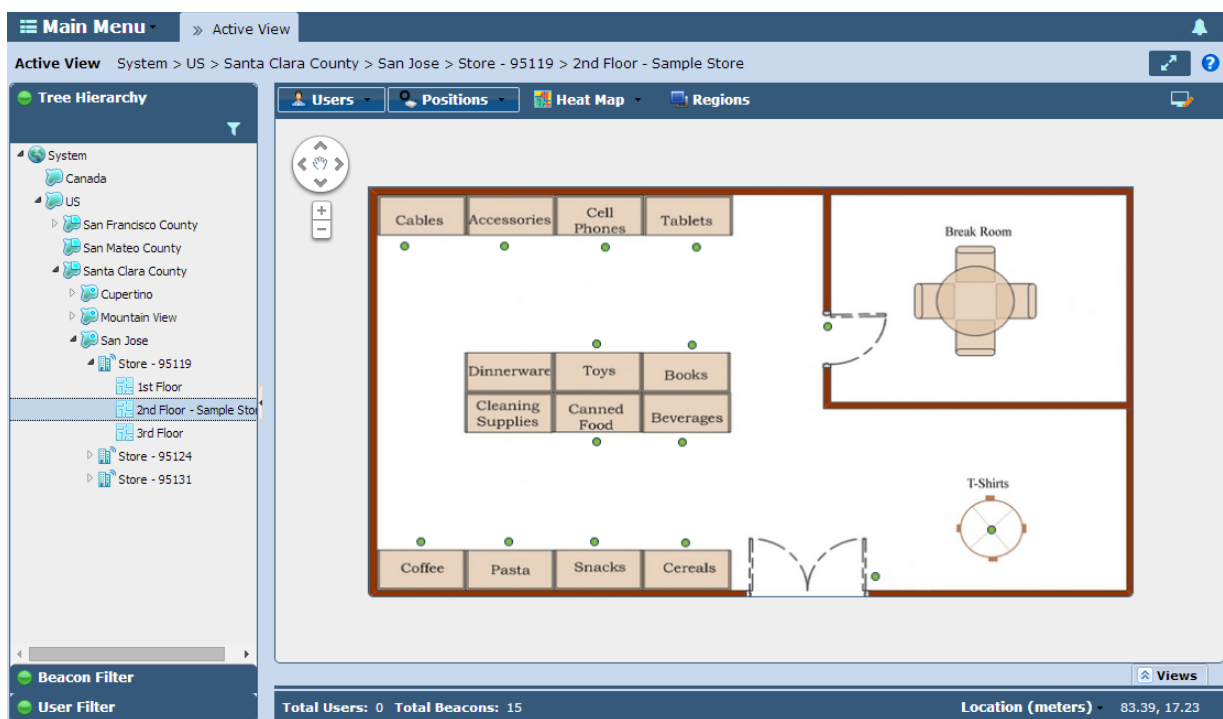2. Select a site floor from the **Tree Hierarchy** on the left side of the screen.

Figure 2-56 *MPact Server Active View Tree Hierarchy - Floor*

3. Select the **Edit Mode** button from the top right-hand side of the tool bar.

4. Select **Add Floor Region** from the **Positions** drop-down menu.
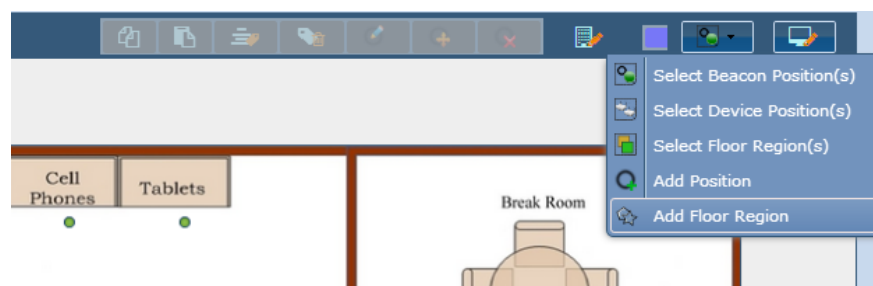

Figure 2-57 *MPact Server Active View - Add Floor Region*

5. Place the cursor on the floor plan and click at each boundary corner to select an outline of the floor region, until the boundary is closed at the starting point.

    For example, five clicks draws a rectangular region. However, the boundary can be most any shape.
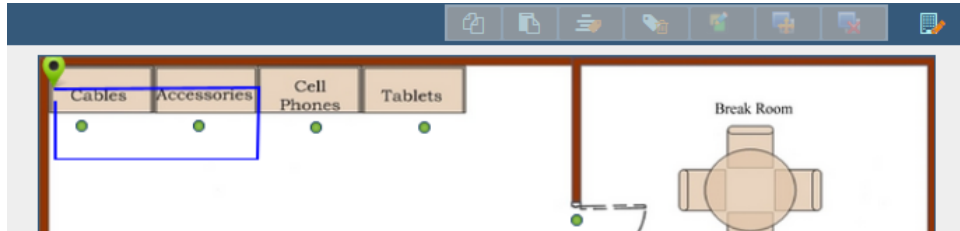

Figure 2-58 *MPact Server Active View - Add Floor Region Boundary*

When the boundary is closed, the **Add Floor Region** dialog box displays. Add information as required, including category and category values, for sending notifications for promotional items.

Figure 2-59 *MPact Server Active View - Add Floor Region Dialog Box*

6. Refer to the following region configuration options:

Region Name	Optionally provide a 30 character maximum region name. If no name is assigned, it will not display on tool-tip summaries for region identification.
Region Description	Enter a 30 character maximum description to further differentiate this region from others with similar attributes.
Position Categories	Select *Add Category* to assign a category to a position. Select *Category Values* (from the drop-down menu) for the region on the site floor. These selections are required for notifications, coupons or product information sent to a shopper's mobile client when the customer is browsing in the store.
Region Vertices (meters or feet)	Vertices (plural for vertex) are a special point describing the corners (or intersections) of geometric shapes. They can display in either meters or feet as region coordinates.

Region Color	Assign a color to the region to aid in its identification from other regions.

7. Review the newly created region.

Figure 2-60 *MPact Server Active View - Floor Region Expected Results*

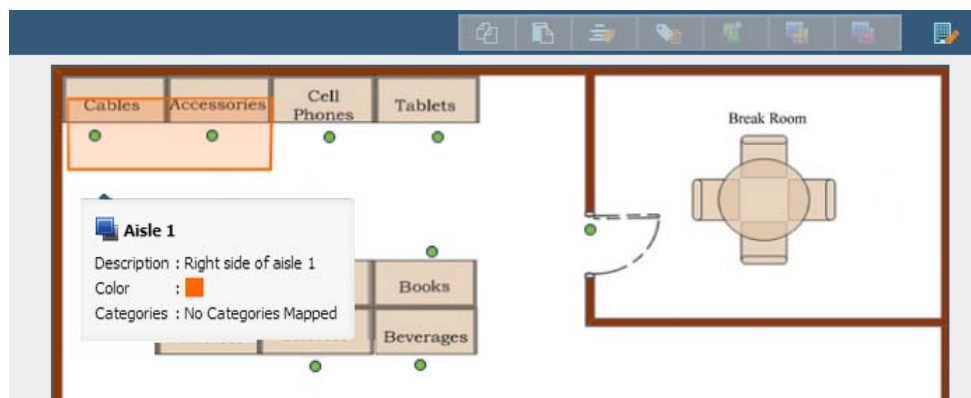When the cursor is placed over the region, a popup displays supporting information.

Figure 2-61 *MPact Server Active View - Floor Region Tool-Tip Summary*

8. Turn displayed regions on and off by selecting and deselecting the **Regions** button.

9. Select from the following as required:

    •   *Delete*: Choose **Select Floor Regions** from the **Positions** drop-down menu, then select the **Delete Region Position** button to remove the region from the floor plan.

    •   *Move*: Choose **Select Floor Regions** from the **Positions** drop-down menu, then select the **Move Region Position** button to drag and release the region on the floor plan.

    •   *Edit*: Choose **Select Floor Regions)** from the **Positions** drop-down menu, then select the **Edit Region Position** button to change the boundaries of the floor plan region.

2.3.5 Edit Mode

The floor level displays a collection of toolbar buttons, from left to right, for *Users*, *Positions*, *Heat Map*, *Regions* and *Edit Mode*. These items are used to display deployed items within a selected floor. Select and deselect each button to turn features on and off.

Figure 2-62 *MPact Active View - Display Options (Floor Level)*

The **Edit Mode** button on the far right-hand side of the toolbar allows the administrator to make changes to a number of items, including the floor plan, positions, beacons, devices and regions.
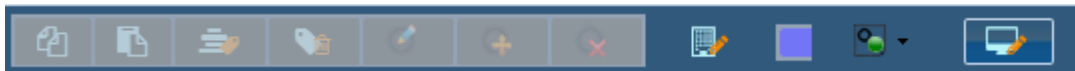

Figure 2-63 *MPact Dashboard - Active View Edit Options (Floor Level)*

When the **Edit Mode** button is selected at the floor plan level, the following edit options become available:

- **Edit Floor Plan**: Replaces an existing floor plan.

- **Color**: Provides color to a region.

- **Select and Add**: Selects beacon positions, device positions, and floor regions. Also use to add floor regions on a floor plan or add beacon positions.

2.4 User Tracking

MPact administrators can track one user's movements at a time, filtered and customized on a site's floor. Use this information to help assess the effectiveness of product categorizations and beacon placements within specific deployments.

To administrate MPact user tracking capabilities:

1. Select **User Tracking** under the Locationing main menu item.

2. Select a site floor from the tree hierarchy.

> **NOTE:** When selecting **User Tracking**, the user selection setting is not defined and must be set by the administrator. Double-clicking on a user from Active View will launch user tracking with the user set for tracking.

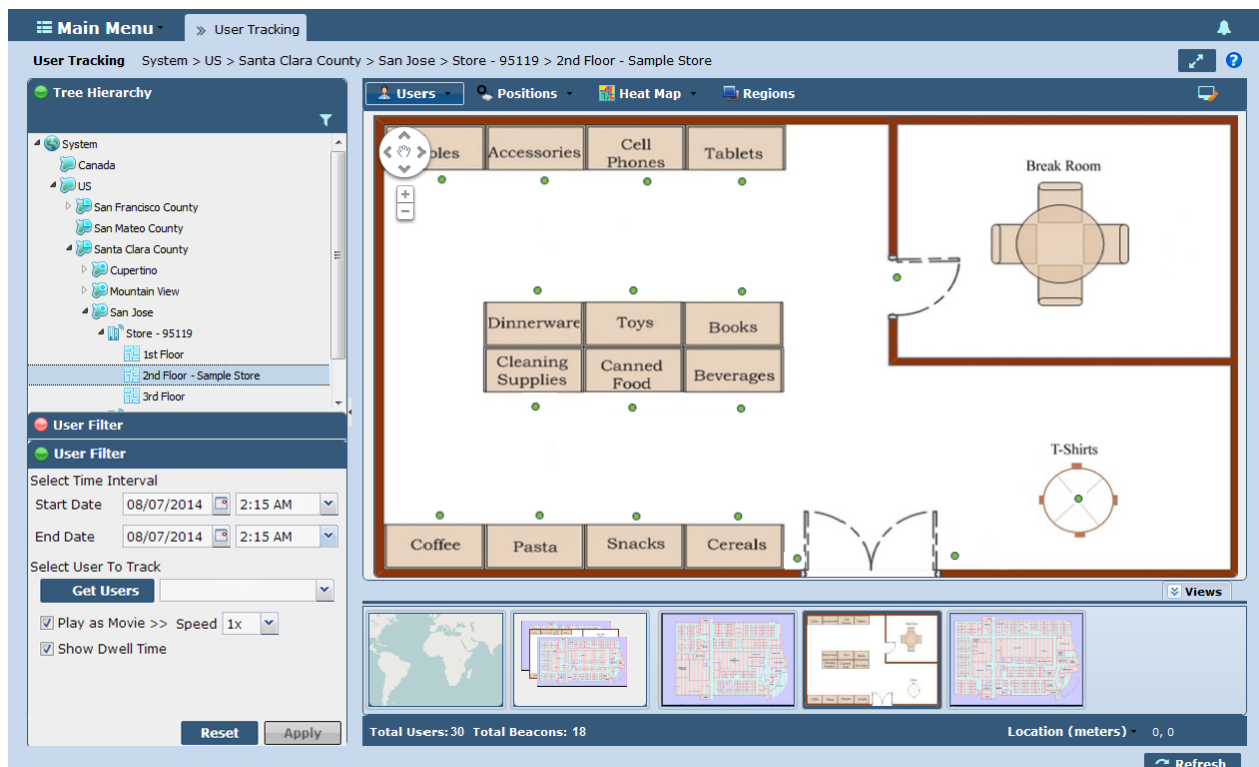3. Select **User Filter** at the bottom of the tree to select a time interval and other tracking options.

Figure 2-64 *MPact Active View - User Tracking*

4. Refer to the following user tracking options to filter visibility:

Select Time Interval	Use the *Start Date* and *End Date* menus to set the beginning and end period for tracking a user's movements within the site and selected floor. This is the interval the selected user's movements display on the MPact interface. The default value is 1 hour.

Select User to Track	Select *Get Users* to display a list of available users (mobile clients) from the drop-down menu to track within the specified interval.
	Select a user from the list provided. Only one user can be tracked at a time. When a user is selected, the administrator can toggle between floor plan displays if the target user navigates from one floor to another.
	If no user is located, a message displays stating that no user could be located within the time specified. If that's the case, consider expanding the time interval utilized.
	When a user is selected, a user icon displays on the floor plan.
Play as a Movie	User movements can be customized (accelerated) to display as video animation. Available user movement speeds include, 1x, 2x, 4x, 8x and 16x. Play, fast forward and rewind functions are available to assist the administrator from the lower, left-hand, side of the user tracking screen. This feature is enabled by default.
Show Dwell Time	Select the dwell time option to apply circles to users representing how long they have remained in a specific location. A circle has a user icon on it, if it's the user's most recent position. Visited locations display as a blue circle without the icon. Refer to the lower, right-hand, portion of the screen to review the legend illustrating how the dwell increases as the user remains (in minutes) at a specific location. Dwell time assists administrators in placing specific advertisements in locations where customers tend to linger.

5. Select **Apply** to begin user tracking with the defined filter settings. Select **Reset** to clear the settings and update the time interval used for tracking to a more inclusive time interval.

The following image displays a user (mobile client, in pink) on the site floor:
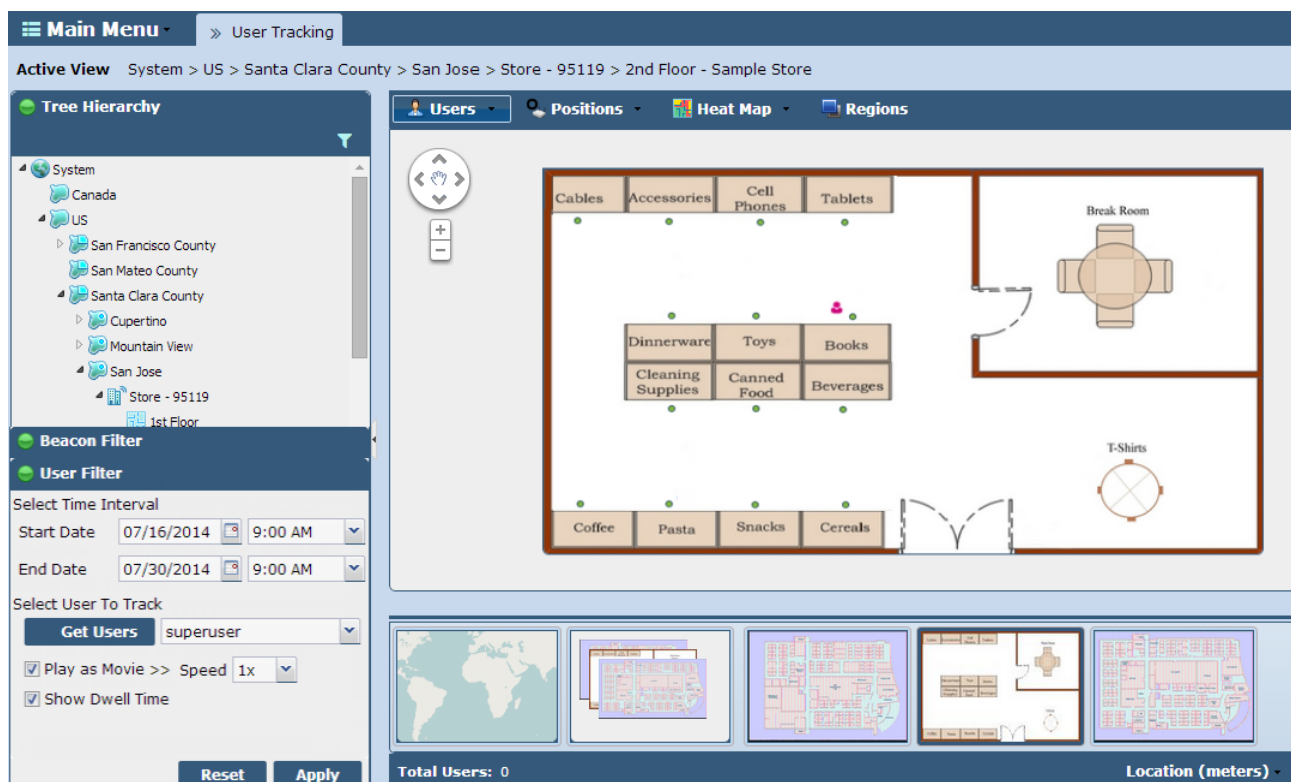

Figure 2-65 *MPact Active View - User Tracking*

CHAPTER 3 CONFIGURATION

Use the **System Configuration** portion of the server UI for **Account Management** and system access assignments. **Categories** allow an administrator to group product family items logically and better apply significance to locationing, customer traffic and dwell time data. MPact events are tied to categories and category fields.

For more information, refer to the following:

- *Account Management*
- *Categories and Category Values*
- *Notifications*
- *System Configuration*

3.1 Account Management

Use **Account Management** functions to create new MPact Server administrative accounts, edit existing user accounts, assign roles to accounts, and optionally copy attributes of one account to another or remove obsolete user accounts. Accounts created on the server are used by both the server and the toolbox, the toolbox uses the accounts to access the server. For more information, see *Motorola Solutions MPact Location & Analytics Toolbox Reference Guide* available at: *https://portal.motorolasolutions.com/Support/US-EN/Wireless+Networks*.

To manage MPact Server user accounts:

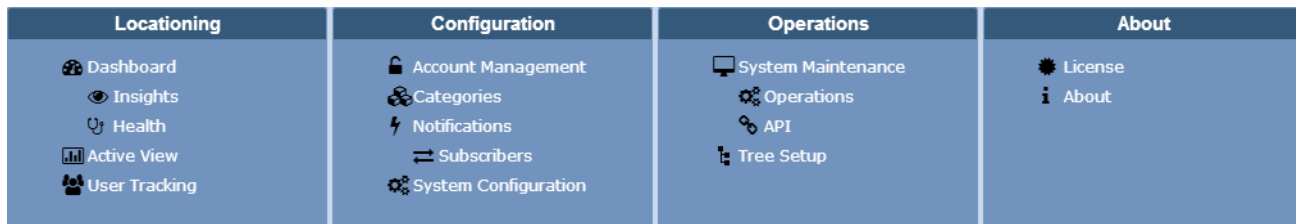1. Select **Account Management** under the Configuration main menu item.

Figure 3-1 *MPact Main Menu - Operations*

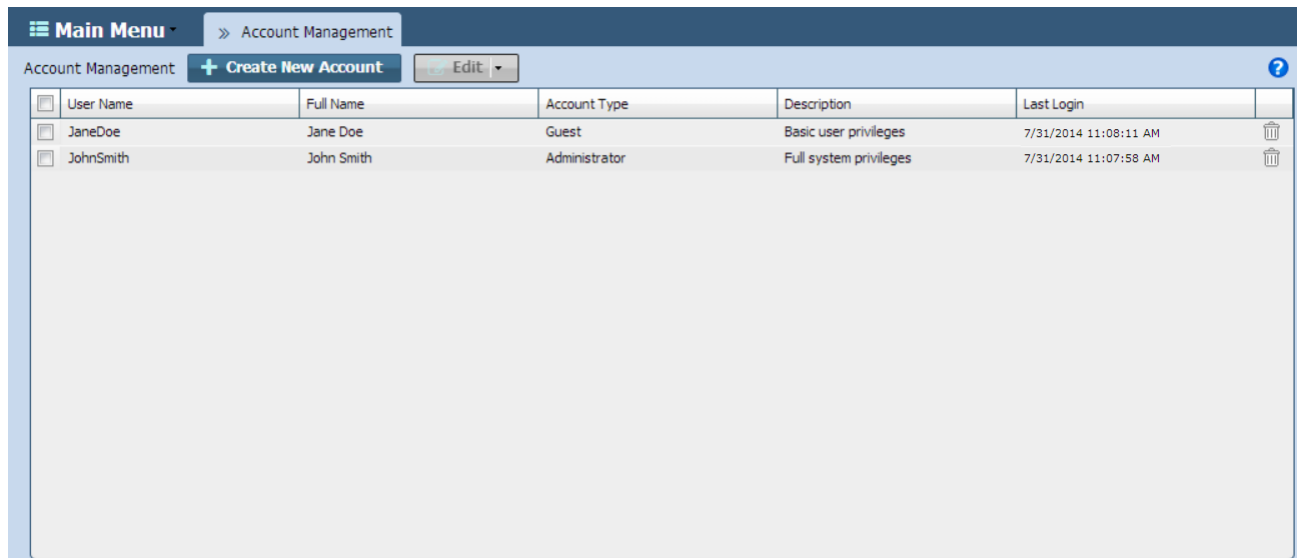The screen displays existing users, their assigned roles and the last time they logged into the system.

Figure 3-2 *Account Management - Create New User Account*

2. Select **+ Create New Account** to define a new user.

Figure 3-3 *Account Management - Create User*

3. Set the following user credentials:

Account Type	Setting an account type is required for new users. Specify whether the newly created user is an Administrator or Guest. *Administrator Privileges*: Full system-wide read/write permissions *Guest Privileges*: • Read permissions only. • No access to Account Management and System Configuration. • No access to System Maintenance API Export and Import functions.
Full Name	Enter a thirty character maximum *Full Name* for the user. This is the name displayed for user identification within the system. Setting the full account name is required for new users.
Description	Provide a thirty character maximum *Account Description* to best describe this new user and differentiate them from others. A description is optional.
User Name	Enter a thirty character maximum user name to associate with specific user activity on this account.
Password	Provide a thirty character maximum password to provide account protection for the user.
Re-Password	Confirm the password to ensure its accuracy in subsequent logins. Confirming the password is required.

4. To modify an existing user account, select a user check box to activate the **Edit** drop-down menu, or double-click on a user from amongst those displayed.

   When editing a user, select only one at a time, as user credentials cannot be revised for a collective set. A selected user displays editable fields for revising their *Account Type*, *Full Name*, *Description* and *Password*. A time stamp also lists the last time each user was active.

Figure 3-4 Account Management - Edit User

5. Change one or more fields as required to edit the selected user's configuration. When completed, select **OK** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

6. To remove an existing user, use the **Edit** drop-down menu and select the **Delete** option.
   A prompt displays to confirm the removal.

7. To copy an existing user and their credentials, use the **Edit** drop-down menu and select the **Copy** option.
   A prompt displays requesting a password. Enter a password to complete the copy command.

8. Select **OK** to commit the updates.

3.2 Categories and Category Values

Use **Categories** to group product family items logically and apply significance to locationing, customer traffic and dwell time data. MPact events are tied to categories and category fields. When beacons are deployed, they are associated with the location of a specific product category within a floor map. As client users move about the floor, their beacon visits and dwell times can be associated with product categories and the beacon's location.

Add **Category Values** as a subset to refine existing Categories. Ensure any values added make up a logical group of products, well suited for the client traffic and dwell time reported under its parent category's beacon deployment location.

To administrate Categories:

1. Select **Categories** under the Configuration main menu item. Existing categories display on the left-hand side of the screen.

2. Select a Category from amongst those displayed to list the product names administratively aligned with that category's beacon location on a site's floor plan. Supporting category data displays on the right-hand side of the screen (**Category Values**).

Figure 3-5 *Categories*

In Figure 3-5, **Accessories** is selected as the category. The *values* on the right-hand side of the screen represent the product categories grouped for tracking under the parent *Accessories* category.

3.2.1 Create New Categories

Create new Categories that best reflect product and beacon locations on the aisle of the store.

To create a new Category to associate with a beacon:

1. Select **+ Create New Category**.

2. Enter a thirty character maximum **Category Name** and **Category Description**.

Figure 3-6 *Category- Add New Category*
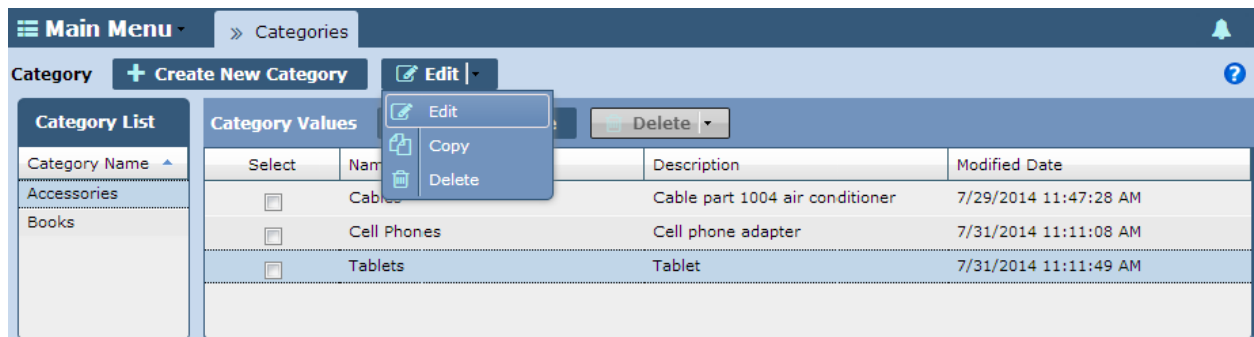
3. Select **OK** to commit the updates.

   Upon creation, the new category displays along with existing ones on the left-hand side of the screen.

3.2.2 Edit Categories

Select and edit an existing category to best reflect the product and beacon location on the aisle of the store.

To edit an existing Category:

1. Select a **Category** to edit from the left-hand side of the screen.

2. Select **Edit** from the **Edit** drop-down menu.

Figure 3-7 *Category- Edit Category*

3. Make changes to the **Category Name** or **Category Description**.

4. Select **Ok** to commit the updates.

3.2.2.1 Copy Categories

Copy categories as needed when new customer tracking locations become needed with existing values, perhaps as categories grow too large in the product definition.

To copy an existing Category:

1. Select a category to copy from the left-hand side of the screen.

2. Select **Copy** from the **Edit** drop-down menu.
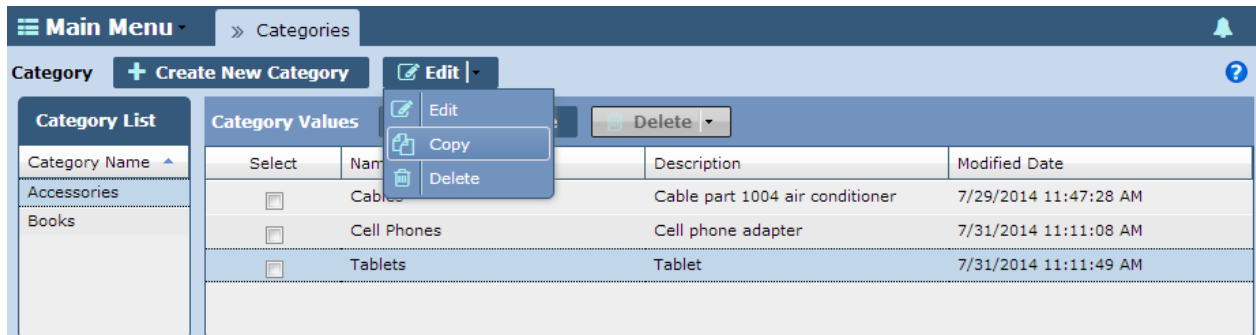
Figure 3-8 *Category- Copy Category*

The newly copied category displays in the left-hand side of the screen below the copied category.
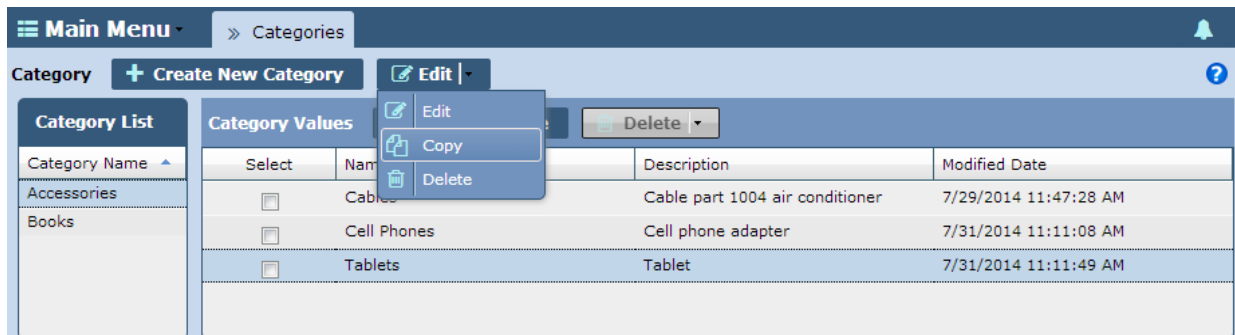
Figure 3-9 *Category- Copy Category*

3.2.2.2 Delete Categories

Delete categories as they become obsolete.

To delete a Category:

1. Select a Category to delete.

2. Select **Delete** from the **Edit** menu.

3. Select **Yes** to implement the changes to the category list.

NOTE: Motorola Solutions recommends an administrator export and archive a category's defined values (in CSV file format) before deleting a category.

3.2.3 Create Category Values

To create a new category value (insert a product class table entry) for an existing category:

1. Select a Category from the **Category List** on the left-hand side of the screen.

2. Select the **+ Add New Value** button to the right of **Category Values** to display new fields.

3. Add **Name** and **Description** values that correspond to the category's product family.

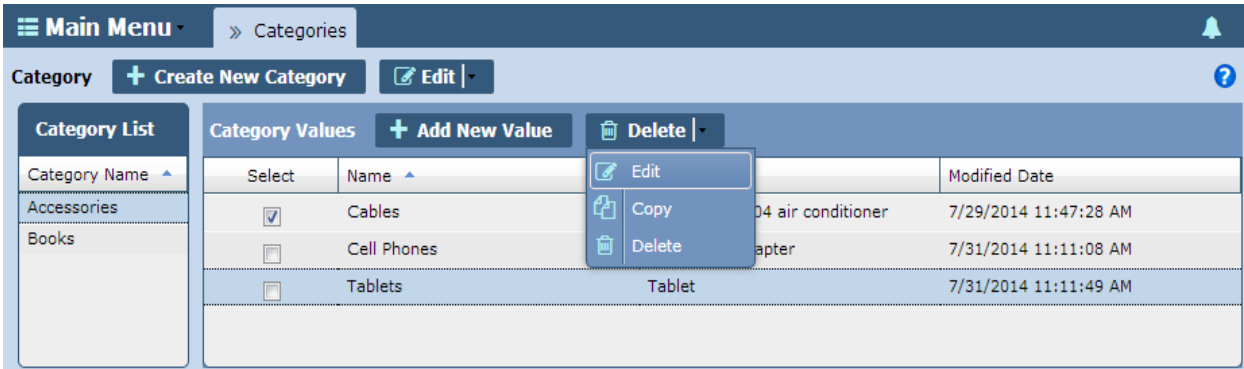4. Select **Update** to implement the new value.

Figure 3-10 *Categories - Add New Value*

NOTE: Ensure any value you add is a logical group of products, well suited for the client traffic and dwell time reported under its parent category's beacon.

3.2.3.1 Edit Category Values

Ensure any revised value is suited for its parent category or risk skewing the effectiveness of customer visits and dwell times reported by beacons.

To edit Category Values:

1. Select a Category from the **Category List** on the left-hand side of the screen.

2. Select the check box for the value that requires editing.

3. Select **Edit** from the **Delete** drop-down menu.

Figure 3-11 *Categories - Editing Category Values*

4. Make changes to the **Category Value Name** or **Category Value Description** fields as required.

5. Select **Update** to commit the changes.

3.2.3.2 Delete Category Values

Delete Category Values as they become obsolete or unsuited for its parent category.

To edit Category Values:

1. Select a **Category** from the **Category List** on the left-hand side of the screen.

2. Select the check box for the value that requires editing.
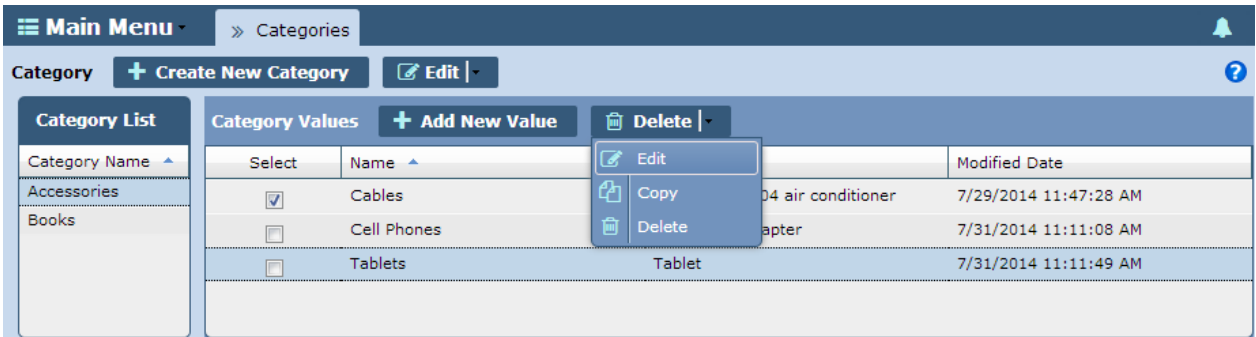
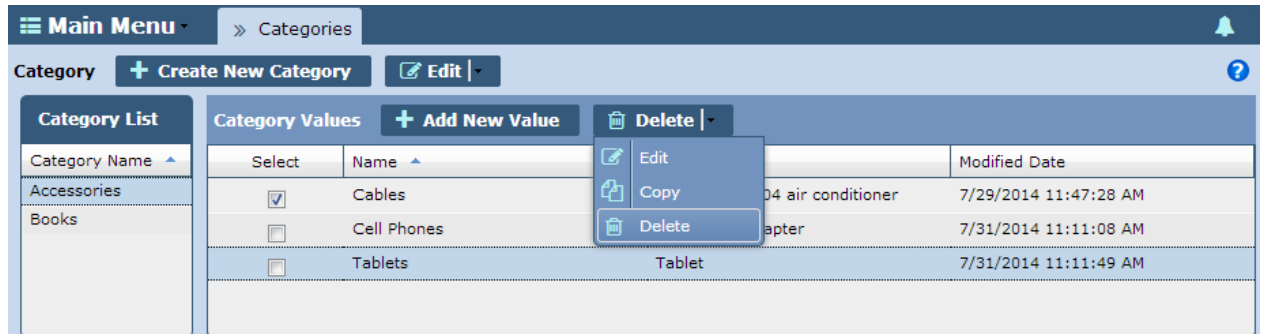3. Select Delete from the **Delete** drop-down menu.

Figure 3-12 *Categories - Delete Category Values*

4. Select **Update** to commit the changes.

3.3 Notifications

Notifications inform subscribers when an action is performed or an event is received, which can be as simple as passing by a product's beacon location. Beacon notifications include actions such as client entry and dwell time. Each notification can be assigned to one or more subscribers or destinations. Figure 3-13 shows MPact Server notification communications with a subscriber.

MPact Server Notifications

MPact can send three types of Notifications - based on:
- Category
- Region
- Beacon

Each Notification can have two types of triggers:
- Dwell Time
- Entry

MPact Server

Web Server (Subscriber)
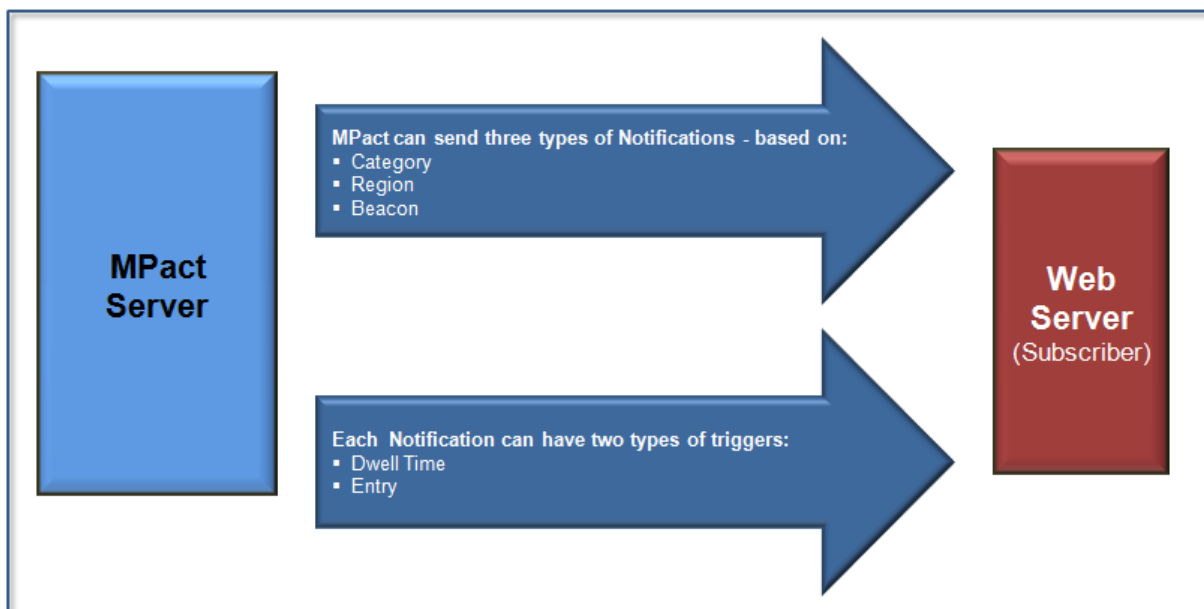
Figure 3-13 *Configuration - MPact Server Notifications*

Use **Notifications** to route events generated from the MPact Server and filter the subscribers to receive them.

To administrate MPact Server notifications:

1. Select **Notifications** under the Configuration main menu item.

Locationing	Configuration	Operations	About
Dashboard	Account Management	System Maintenance	License
Insights	Categories	Operations	About
Health	Notifications	API	
Active View	Subscribers	Tree Setup	
User Tracking	System Configuration		

Figure 3-14 *MPact Main Menu - Notifications*

The **Event Notifications** screen displays.

Figure 3-15 *Configuration - Event Notifications*

2. Refer to the following to set a new, unique, server event and refine the event's receivers:

Notification Name	Enter a thirty character maximum event name to help differentiate it from others with similar configurations. Consider the *Category*, *Beacon* or *Region* event type when assigning an event name.
Type	Use the drop-down menu to specify whether the event type is emphasizing a category, beacon or region notification.
	When *Category* is selected, the right-hand side of the display lists all the product categories defined thus far for the selected system, site or floor. Filter whether the notification for this event is associated with a specific product category or is applied to all the category placements made thus far.
	When *Beacon* is selected, the right-hand side of the display lists all the beacon deployments defined thus far for the selected system, site or floor. Use each listed beacon's Position ID and Beacon Name to filter which beacons are selected for this specific event.
	When *Region* is selected, the right-hand side of the display lists beacon region configurations defined thus far for the selected system, site or floor. Use each listed beacon's Position ID and its deployed region name to filter which regions are included/excluded from each event based on geographic considerations.
Subscriber(s)	Use the drop-down menu to specify the groups receiving an event notification. Each event can have a unique group of subscribers. If there are no subscribers appropriate to a specific event, select the *Confirm > Notifications > Subscribers* menu item to define the type and server parameters.
Description	Provide a unique 30 character maximum description to differentiate this event from other events with similar attributes.
Trigger(s)	Select one or more of the following triggering events:
	• *Enter*: Triggers the notification sent to the selected category, beacon or region as the mobile client enters the location. Updates every two hours.
	• *Dwell Time*: Triggers the notifications sent when the mobile client dwells for an extended period of time near the target area. Notifications are sent every five minutes.
	• *Enable Notification*: Turns on the notification sent to selected devices when the trigger has been activated.

Expand/Collapse	Use the *Expand* and *Collapse* navigation facilities to select the system, site or floor areas to populate with options for the selected *Type*. Select *System* to include all beacons, categories or regions (depending on selected *Type*) in event consideration. Otherwise, use the expand and collapse navigation tools to select a specific site or floor for refining event attributes.
Filters	The panel on the lower, right-hand, side of the screen differs depending on whether category, beacon or region is selected as the event type. Once the *Type* is selected, select the beacons, categories or regions included in event consideration.

3. Select **+ Create New Notification** to define the configuration of a unique MPact Server event that can be tracked and differentiated from existing events.

Figure 3-16 *Configuration - Create New Notification*

4. Select an event notification from amongst those listed to populate the lower portion of the screen with the fields and parameters to update the event notification's configuration.

5. Select **Save** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

3.3.1 Event Notification Modifications

Select one of the following from the **Delete** drop-down menu:

- **Edit**: Enables the update of notification data.
- **Copy**: Adds a copy of a notification to the list.
- **Delete**: Removes an existing notification from the list.

3.3.2 Notifications Verification

MPact pushes notifications in the JSON format. Copies of outbound notifications successfully sent by MPact are not stored in the database; only failed outbound notifications are stored in the database.

To verify Notifications are working:

1. Setup a Web Server (e.g. Apache).

2. Write a script or CGI or servlet to process posted notifications in Web Server.

3. Configure MPact with Web Server details (Configure Subscriber in MPact).

4. Configure **Notifications** in MPact.

3.4 Subscribers

Use **Subscribers** to segregate event notifications to the users or administrators most impacted. Subscriber are a subset of **Event Notifications**. Each set of subscribers can have different domain locations and contact configurations applied.

To administrate MPact Server notifications:

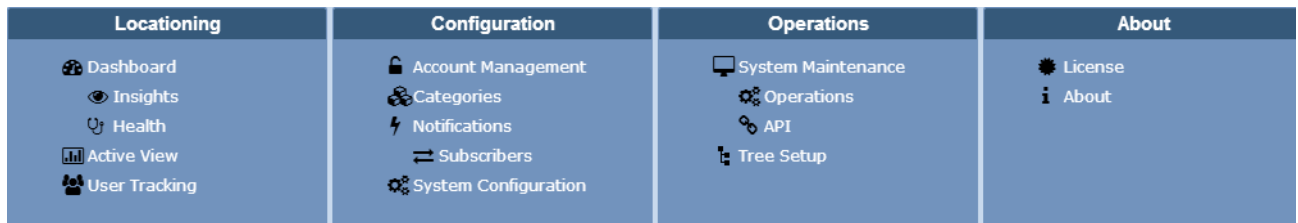1. Select **Subscribers** under the Configuration main menu item.

Figure 3-17 *MPact Main Menu - Subscribers*

The screen displays existing subscribers, their URL for event notifications, and server time-out and connection retry information.

Figure 3-18 *Configuration - Event Notification Subscribers*

2. Highlight a **Subscriber Name** to modify.

3. Select one of the following from the **Delete** drop-down menu:

   • **Edit**: Enables the update of subscriber data.

   • **Copy**: Adds a copy of a subscriber to the list.

   • **Delete**: Removes an existing subscriber from the list.

Figure 3-19 *Configuration - Event Notification Subscribers*

3.4.1 Create New Subscriber

If there are no existing subscribers to suit event notification needs, create a new one.

To create a new subscriber:

1. Select the **+ Create New Subscriber** button.

   An existing subscriber can be selected to display the same fields used for adding a new subscriber.

Figure 3-20 *Configuration - Create New Subscriber*

2. Set the following attributes for a new subscriber or existing subscriber:

Subscriber Name	Provide a subscriber name to help differentiate it from other subscribers. The name could be an indicator of the administrator name(s) comprising the subscriber group or a partial description.
Subscriber Type	Use the drop-down menu to select the connection medium used to provide MPact Server notifications to the target subscriber. The default setting is Web Server (REST).
Description	Optionally, provide a description to detail the subscriber's membership or creation objective.

Server URL	Provide the complete and accurate domain path to the server resource used to host event notifications on behalf of this subscriber. Both HTTP and HTTPS path types are supported.
Auth Type	Identify the user validation (authentication) type when posting notification data to subscribers. The supported types are *Basic, Form* and *None*.
Timeout (ms)	Set the time-out value (in 500 ms increments from 500 - 3000 milliseconds) used to terminate a connection attempt to the designated server when a connection cannot be established.
Retries	Set the number of server retry attempts (from 0 - 5) initiated upon a failed connection attempt before further attempts are terminated.
HTTP Header Parameters	When posting the notification data to subscribers, optionally define *Key* and *Value* custom HTTP Headers in the post. These custom values are added to the HTTP Headers along with payload data.
Custom Parameters	When posting notification data, MPact generates a set of (name, value) pairs. Optionally, add *Key* and *Value* custom parameters, in addition to what is generated by MPact. These (name, value) pairs are taken as-is and added into the notification data being posted.

3. Select **Save** to commit the updates, **Reset** to revert to the last saved configuration or **Cancel** to close and exit the screen.

3.5 System Configuration

Use the **System Configuration** screen to set global beacon settings on the MPact Server, then push to selected beacons as their respective configurations warrant. A beacon's firmware transmits BLE beacons. A beacon's transmit power and mode configuration can be set using the MPact Server interface, then pushed to beacons using the MPact Toolbox application.

Beacon configuration settings must be set accurately by the MPact Server before provisioned to an MPact Toolbox supported iPad. Once downloaded to an iPad, the beacon configuration can be set on the actual beacons.

To administrate MPact Server beacon configurations:

1. Select **System Configuration** under the Configuration main menu item.

Figure 3-21 *MPact System Configuration*

2. Refer to the following table to set **Beacon Configuration**:

Beacon Mode	Sets the mode defining how signals are emitted from MPact beacons. Supported modes include *Battery Save, iBeacon* and *MPact* (default setting). *Battery Save*: Optimized for battery life by making the beacon as small as possible (the beacon contains the minimal amount of information needed to support MPact server functions). An MPact beacon contains the Motorola Solutions power-save mode beacon, beacon ID and a single byte representing the percentage of battery life remaining (0-100). *iBeacon*: Created by Apple for use in iOS devices (beginning with iOS version 7.0). There are three data fields Apple has made available to iOS applications, a *UUID* for device identification, a *Major* component for device class and a *Minor* component for more refined information like product category. The UUID must be the same on the beacon and the server. The Major field identifies the device class (range, 0-65535). For example, the Major value could be the same for each device on the first floor or a particular department store. The Minor field is a field for more refined information (range, 0-65535), like product category. Beacons configured in iBeacon mode use a combination of Major and Minor values for the beacon ID. After scanning and installing the beacons in the Toolbox, beacon configuration must be reapplied (pushed from the Server) using the Toolbox (*Configuration*) to associate the Major and Minor values from the Server. *MPact*: Uses the iBeacon format, however, the Major and Minor fields have been defined so MPact data is compatible with the MPact server. No input is required.
UUID (16 bytes)	If setting the beacon mode to iBeacon or MPact, enter a 16 byte hex character string that defines the purpose of the device. The UUID must be the same on the beacon and the Server. A UUID is represented by 36 characters (32 alphanumeric characters and four hyphens), for example, 123a4567-e23b-89d3-a234-135790864215. The *Universally Unique IDentifier* (UUID) classification is meant to be broad. For example, a UUID could identify a beacon was owned by a specific company. To generate a UUID, use any GUID/UUID generation tool to create your own identifier, for example, the uuidgen command in OS X. The uuidgen command generates a UUID, which is a 128-bit value guaranteed to be unique.
Beacon Power (-23 dBm to 0 dBm)	Set the beacon's output power from -23 to 0 dBm.
Beacon Channel (1 to 7)	Define a channel from 1-7 (7 is the default) to apply an operation channel restriction to beacon transmissions. This is helpful in areas where beacon deployments are abundant, as beacons can be strategically grouped to specific channels to reduce excess channel interference on the network. Channel broadcast options: 1: Channel 39 2: Channel 38 3: Channel 38, 39 4: Channel 37 5: Channel 37, 39 6: Channel 37, 38 7: Channel 37, 38, 39

Beacon Interval (0.1 sec to 10 sec)	Define an interval (from 0.1 sec to 10 sec) for a beacon transmission. With a shorter the interval, there is increased accuracy, but a shorter beacon battery life. The default setting is 0.6 sec.
Uploaded Version	Lists the firmware version last utilized for beacon uploads by the MPact Server (for example, broadcaster-1.0.0.0-00xR.bin). Use this data to assess whether beacons could use a firmware update to benefit from increased functionality and feature support.
Last Uploaded	Lists the date and time the most recent firmware version (the version listed in the Uploaded Version field) was pushed to the beacons.
Firmware	Choose *Select File* to launch a screen for navigating the system for a target firmware file for subsequent beacon uploads.

3. Select **Save** to commit the beacon configuration updates.

4. Set **Network Proxy Settings** to define how event subscribers receive their notifications from the MPact Server:

User Name	Enter a 30 character maximum user name to associate with specific user activity on this account.
Password	Provide a 30 character maximum password to provide account protection for the user.
HTTP Proxy Settings	Set the Web domain location for the destination of subscriber event notifications (for example, www.hostname-example.com). This is the IP address of the proxy server.
Port	Use the spinner control to set a virtual port integer for the connection between the MPact Server and the defined proxy server IP address. The IP address should be the proxy server IP address, and the port number is the port where the proxy server is running. This is the proxy server's port number.
ByPass Proxy For	Optionally, bypass a proxy Web domain by providing a numerical IP address for the recipient server receiving event notifications on behalf of the subscribers. Enter the subscriber's IP address that bypasses the proxy server.
Discard	Disables the proxy setting.

MPact Server event notifications can be parsed into separate groups (subscribers). Each set of subscribers can have different domain locations and contact configurations applied. Subscribers are a good way to segregate event notifications to the users or administrators most impacted.

5. Select **Save** to commit these network proxy settings to the MPact Server.

CHAPTER 4 OPERATIONS

Use **System Maintenance** and **Operations** to import and export system logs for archive and server operations. **API** functions enable the administrator to retrieve and export product categories, category values, beacon positions, beacon configurations, hierarchal trees and beacon device ID data to maintain beacon functions. Tree Setup enables the administrator to build global to site hierarchy-specific information for deployments down to the site's floor plan.

To administrate MPact Server operations, refer to the following:

- *System Maintenance and Operations*
- *API*
- *Tree Setup*

4.1 System Maintenance and Operations

Use **Operations** to import and export system logs for local or remote archive, and administrate server operations.

For example, should the server interface be frozen or unexpectedly unavailable, use the following CLI commands:

- **Start**: ./nxstats start
- **Stop Server**: ./nxstats stop
- **Export Database**: ./nxstats exportDb export_location

To administrate MPact operations:

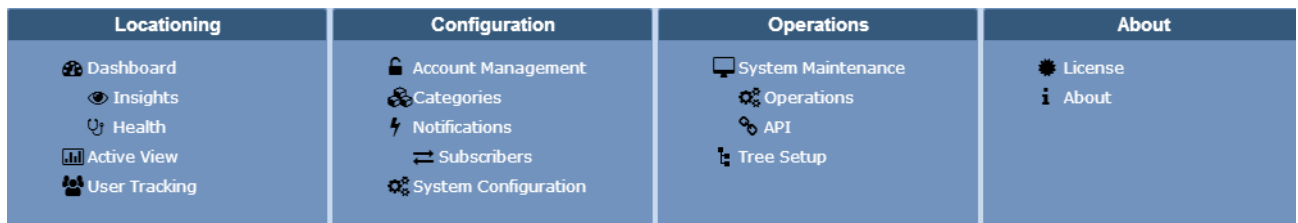1. Select **System Maintenance** or **Operations** under the Operations main menu item.

Figure 4-1 *MPact Main Menu - Operations*

2. From the **MPact Operations** screen, perform the required operation.
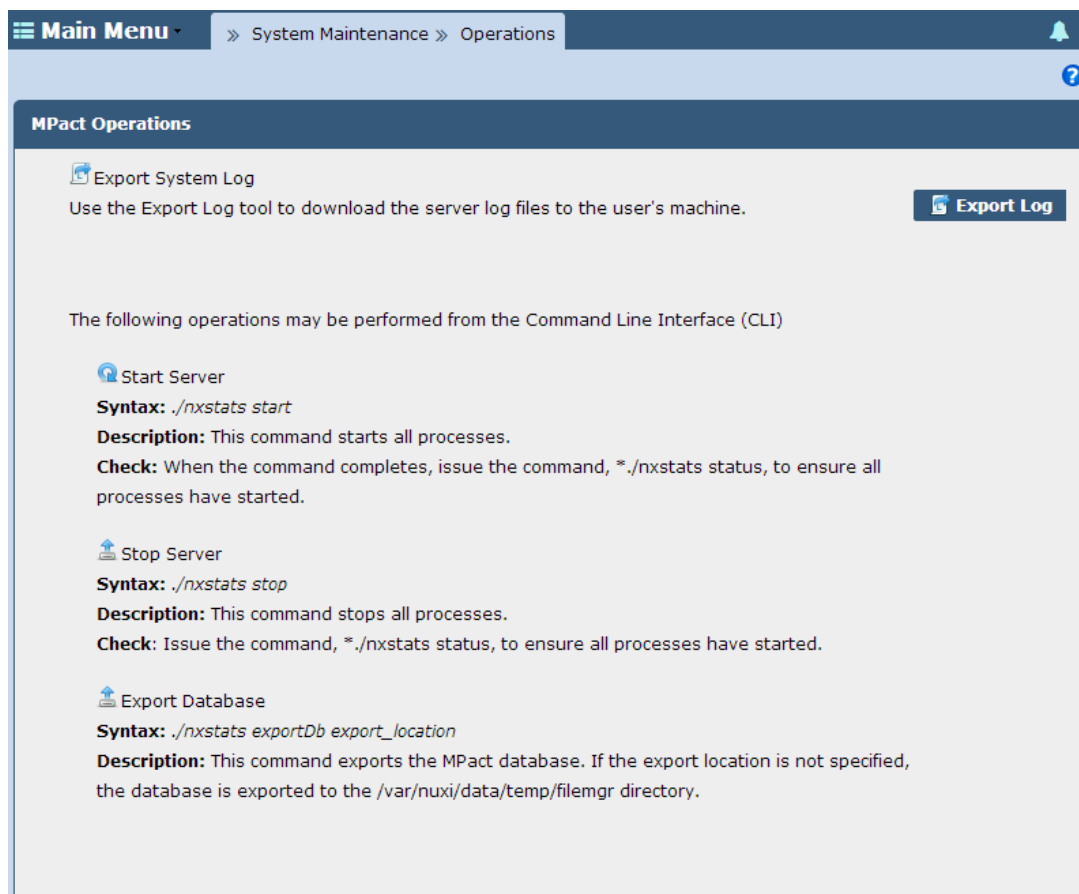
Figure 4-2 *MPact System Maintenance - Operations*

3. Review the following operations:

Export System Log	Allows customers to download system logs, useful for debugging and troubleshooting. Use this option to download a ZIP file containing log messages.
Start Server	Use the CLI's start command to start the MPact Server user interface. Only use this command when necessary to remedy a frozen UI or for terminating a server process in an endless loop. A restart cannot be initiated using the MPact Server UI and must be done with the CLI.
Stop Server	Use the CLI stop server command to force an MPact system stop.
Export Database	Use the CLI's export database command to clear (remove) the entire MPact Server's analytics database of system and site support data 90 days or older. Exporting a database 90 days or older is recommended when MPact Server CPU, disk and memory utilization is over extended. Keep in mind the database can be large, depending on deployments, and this command could take a very long time. The command should rarely be used. In rare cases, the support team might need to export the database to replicate and remedy problems the customer is facing. Export database cannot be done using the MPact Server UI, and must be done with the CLI.

4. Select **Refresh** to update the system operations settings.

4.2 API

The MPact Server supports an API for retrieving and exporting product categories, category values, beacon positions, beacon configurations, hierarchal trees and beacon device ID data. The MPact Server *application programming interfaces* (API) specify how selected MPact interface components interact with the unique attributes set for it within MPact Server. A well defined API makes it more efficient to develop a program by providing all the requisite building blocks. A developer then assembles the data blocks together.

API queries can be uniquely provided and filtered by MPact sites and time intervals. MPact Server APIs can be leveraged by the *Motorola Solutions AirDefense™ Services Platform* (ADSP) application to update application resident hierarchies.

ADSP protects wireless networks from wireless threats and attacks, maximizes wireless network performance and enforces policy compliance. A basic ADSP system consists of an AirDefense appliance, and one or more sensors. Sensors collect frames transmitted by 802.11abgn compliant devices, and sends that data to a central ADSP server for analysis and correlation. For more information, see *MPact Integration with ADSP*.

To manage MPact Server API operations:

1. Select **API** under the Operations main menu item.

    By default, the screen lists expanded *Category, Position* and *Beacon* API directories and their query categories.

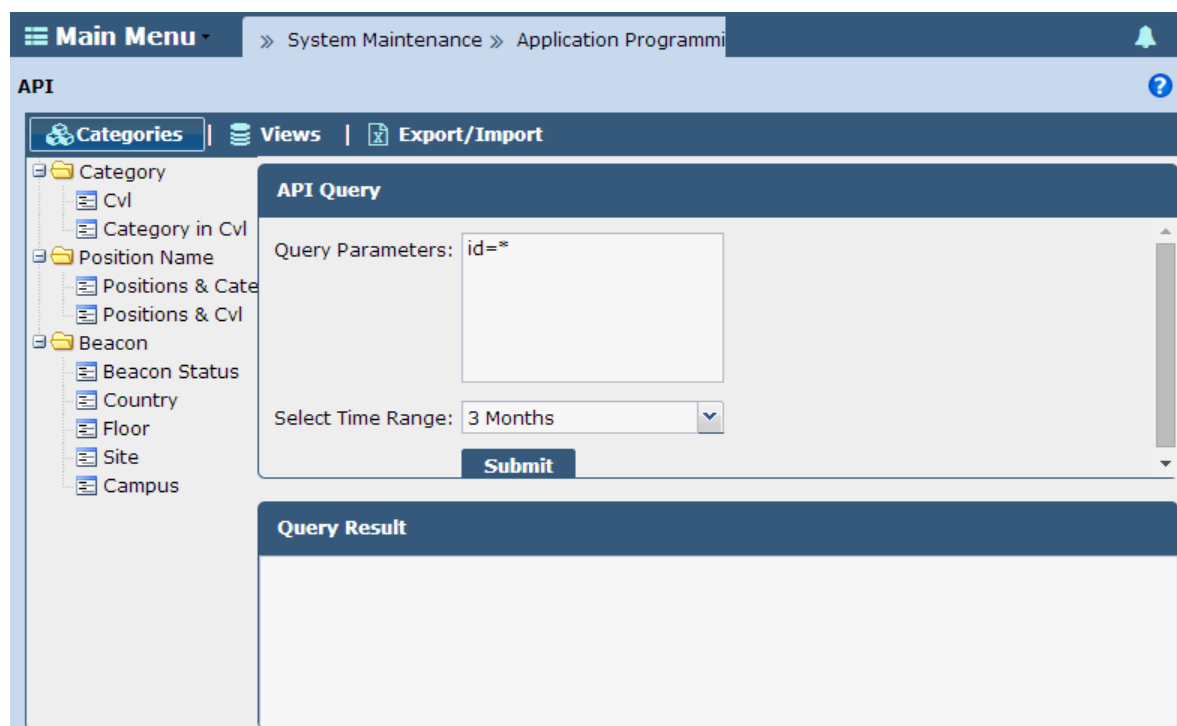***Figure 4-3*** *System Maintenance - API*

2. Select an MPact query categorization type from the either of the **Category** or **Views** hierarchies on the left-hand side of the screen.

    Category queries generally return data relevant to MPact site product categorization, beacon positions and beacon device data. *View* queries generally return client, site floor and hierarchal tree information.

3. Set **API Query** options to refine the specific API action, the site it's applied and the historical period (time range) applied:

Query Parameters	Searches all the data for the query. Enter query parameters as unique API *GET* strings for specific MPact Server information lookups. The following is a listing of top-level API query parameters that can be applied. Returned queries also list API data specific to the retrieved values of the query: `apsInSite` - Get all the Access Points in a site `CatLessCvls` - Get category from a category value `ClientsByCvlBySite` - Get clients of a particular category value from a particular site `clientsBySite` - Get all the clients in a particular site `clientsInCvlInSite` - Get all clients of a particular category value in a site `clientsInSite` - Get all clients in a site `cvlInCat` - Get values in a category `cvlInSite` - Get category values in a site `floorAndPositionForAp` - Get floor and position for an Access Point `floorAndPositionForTag` - Get floor and position for a beacon `floorsInSite` - Get floors in a site `hierarchyInCountry` - Get hierarchy for a country `positionsWithApsInSite` - Get positions with Access Points for a site `positionsWithNoDevicesInSite` - Get positions with no devices for a site `positionsWithTagsInSite` - Get positions with beacons for a site `tagsBySite` - Get beacons by site `tagsInSite` - Get beacons in a site `clientEngagementAnalytics` - Get analytics data for MPact `updateClientStatus` - Update client status
Select Time Range	Use the drop-down menu to select the *24 Hours*, *3 Days, 1 Week, 2 Weeks, 3 Weeks, 1 Month, 2 Months* or *3 Months* historical period the API's GET action extends from the present date.

4. Select **Submit** to execute the query for the selected site and time period.

   The **Query Result** field in the bottom portion of the screen populates with the selected site's deployment data relevant to the specific query entered. The query result displays values currently set for the selected item. This information cannot be manipulated as a configurable API attribute, though this information can be utilized as criteria for API attribute creation using both the original query values and the returned beacon, position, category and client data.

5. Select the **Export/Import** button to populate the screen with import and export options to either import CSV files (containing API data) into the MPact system from a remote location or export CSV files to a local download repository on the MPact Server.

If a file is not in CSV format, an error message displays, stating the file is not in a valid format and the import operation will not be initiated until a properly formatted file is selected for upload.

CAUTION: Importing a *Category, Category Value, Position Value, Beacons, Tree, System Configuration* or *AP devices* into the MPact Server overrides the file maintained locally on the MPact Server. Ensure each one of these files is exported to a secure location on the local server before overriding the server's existing file with an *Import* operation.
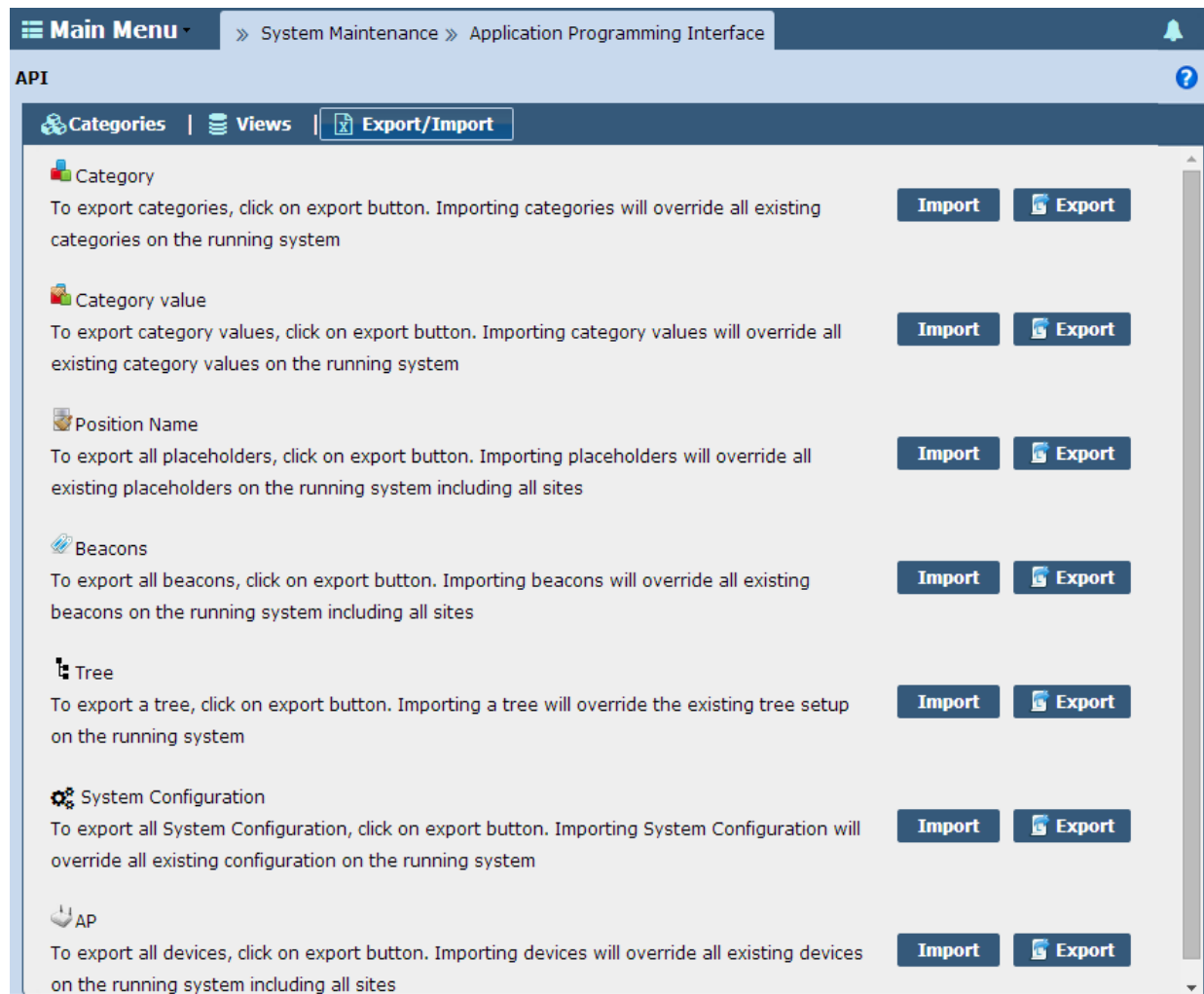

Figure 4-4 *System Maintenance - API Export/Import*

6. Refer to the **Export/Import** table to conduct import and export operations for specific groups of server API data:

Category	*Categories* group product family items logically to better apply significance to location, customer traffic and the dwell times reported by the beacons administrated by the MPact Server. If importing category data, an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Remember, importing a category file overrides all existing category data maintained locally on the MPact Server. Selecting *Export* archives a category's CSV file locally and is a recommended operation for maintaining archived files on the server.

Category Value	*Category values* represent the products grouped for tracking under the parent category. If importing category values, an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Importing category values overrides all existing category value data maintained locally on the MPact Server. Selecting *Export* archives a category value CSV file locally, and is a recommended operation for maintaining archived files on the server.
Position Name	A beacon position represents a beacon's physical position on a site map. The position contains the beacon's x-axis and y-axis coordinates as well as the beacon's direction and antenna pattern. If importing positions, an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Importing positions overrides all existing positions maintained locally on the MPact Server. Selecting *Export* archives a position's CSV file locally, and is a recommended operation for maintaining archived files on the server.
Beacon	MPact beacons are small, battery powered Bluetooth Smart devices strategically placed in retail environments where customer locationing requires tracking using the beacon's radio emissions. If importing beacon configuration values (beacon ID, descriptions etc.), an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Importing beacon values overrides all existing beacon data maintained locally on the MPact Server. Selecting *Export* archives a beacon's CSV file locally, and is a recommended operation for maintaining archived files on the server.
Tree	During an MPact Server setup, users can export their *tree* data from ADSP into MPact. The *Tree* is the hierarchal set of site and floor data under the parent MPact Server system node. The tree can contain a site's *Country, Country Region, City, Campus, Site,* and *Floor.* If importing a tree into the system, an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Importing a tree overrides all existing tree data maintained locally on the MPact Server. Selecting *Export* archives a tree's CSV file locally, and is a recommended operation for maintaining archived files on the server. However, MPact does not auto-synchronize its tree hierarchy with ADSP. For more information, see *MPact Integration with ADSP*.
System Configuration	The following items are part of the Import/Export process: *UUID*: A unique identifier inside the beacon for an iBeacon-capable device to recognize. *Beacon Mode*: 1 is for Battery Save, 2 is for iBeacon, and 3 is for MPact. *Power*: Represents the power level of beacon transmissions in dBm. The higher the power, the further the beacon can be transmitted. The range is from -23dBm to 0dBm. *Channel Mask*: There are three channels for beaconing: 37, 38 and 39. Binary value 111 maps to these three channels. Binary 100 means channel 37 is enabled. Binary 010 means channel 38 is enabled. Binary 001 means channel 39 is enabled. Binary 101 means channel 37 and 39 are enabled. The binary value is from 000 (no channel enabled) to 111 (all channels enabled); the decimal range is from 0 to 7. *Chirp Frequency*: Represents the time interval between two beacons from the same tag. Its range is from 100ms to 10000 ms. In the server UI, it is from 0.1s to 10s, which refers to the same thing. *Firmware Image*: Downloads the link to the uploaded firmware in the server.

AP	*AP Devices* are Access Points or *ADSP* Wi-Fi sensors utilized by the MPact Server for Wi-Fi management and security information. If importing a device into the system, an *Upload CSV* sub screen displays. Select *Upload* then an appropriately formatted CSV file. Importing devices overrides all existing device data maintained locally on the MPact Server. Selecting *Export* archives a device's CSV file locally, and is recommended for maintaining archived files on the server.
	Imported devices are automatically put in an *unplaced* devices table, and are *not* automatically mapped to a site and floor location. MPact administrators must create beacon positions and manually map devices to positions on the site's floor map.

7. Periodically select **Refresh** to update the screen to its latest values.

4.3 Tree Setup

Use the **Tree Setup** to administrate how system data is retrieved and hierarchically displayed for MPact supported deployments. A site plan map is assigned from the floor drop-down menu when the tree hierarchy is created down to the floor level.

To administrate the MPact tree hierarchy:

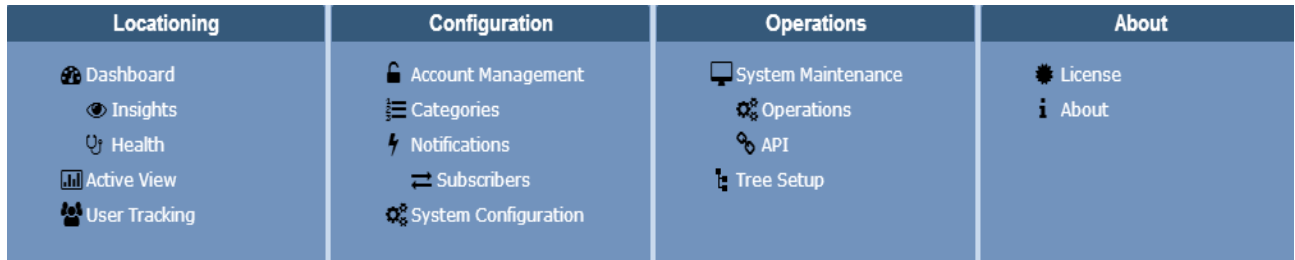1. Select **Tree Setup** under the Operations main menu item.

Figure 4-5 *MPact Server - Tree Setup*

2. From the **System** drop-down menu, select **Add Child** and drag the cursor over a *Country, Country Region, City, Campus* or *Site.* As each node is built, more logical choices become available. For example, *Floor* becomes available for a site node.

Figure 4-6 *MPact Server UI Tree Setup - Adding Tree Nodes*

NOTE: All characters, including space, are valid to use in the Tree Hierarchy, except -q-$* < > # ~ = \ /. The valid length is thirty characters or less.

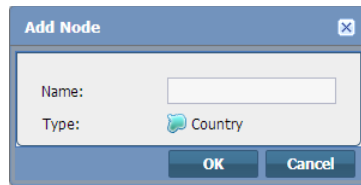3. From the **Add Node** dialog box, enter a node **Name** and select **OK**.

Figure 4-7 *MPact Server UI Tree Setup - Add Node Dialog Box*

4. Continue adding nodes as required until reaching the **Floor** level.

5. Select **Save**. When tree setup is complete, upload a floor plan.

4.3.1 Node Modifications

Nodes can be edited, copied and pasted into another node, and deleted by selecting the drop-down menu for the node and making a selection. Figure 4-8 shows the drop-down menu for the San Francisco County node.
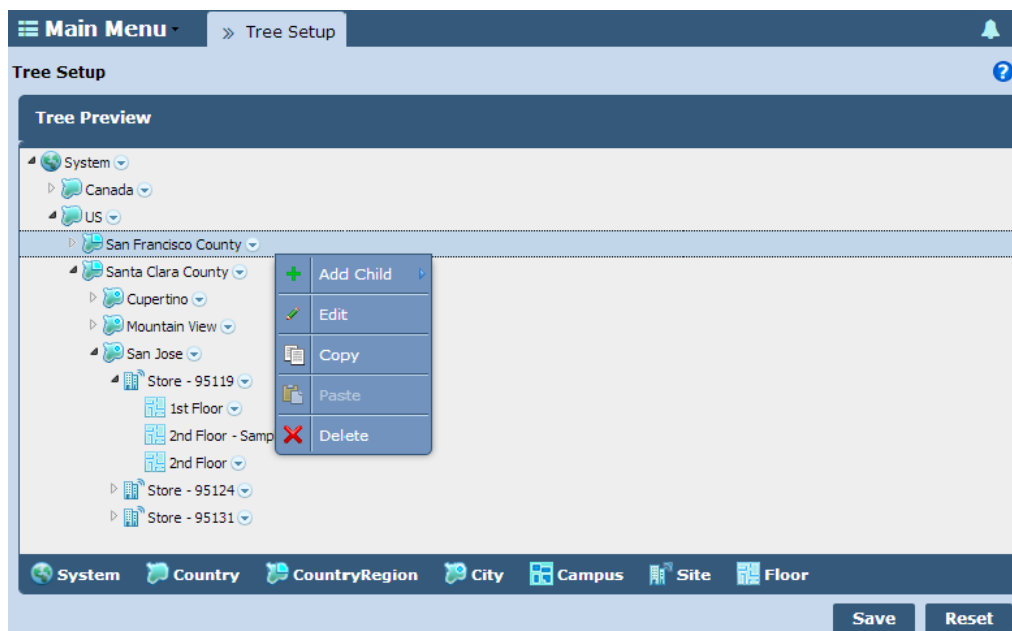

Figure 4-8 *MPact Server UI Tree Setup - Node Modifications*

6. Refer to the following node modification options:

Edit	Allows changes to the name of the node.
Copy	Allows copying (and pasting) of the node and its child items to a like position in the hierarchy.
Paste	Allows pasting of the copied node and its child items to a like position in the hierarchy.
Delete	Allows deletion of a node and its child items.

7. Select **Save** to commit the updates or **Reset** to revert to the last saved configuration.

The next step is to add a floor plan to the floor level node.

4.3.2 Floor Plan Upload

After the tree setup is built down to the site floor level, load a *Floor Plan* image to the site's *Floor*. A site can have multiple floors along with associated floor plans. Optimally, a floor plan should be an accurate representation of the retail floor layout, which includes broad category labeling for items in the area. For example, a grocery store would have labels such as dairy, meats, vegetables etc.

Floor plan dimensions:

- *Minimum floor plan dimension* = 45,000 square feet
- *Maximum floor plan dimension* = 200,000 square feet

Floor plan images have the following constraints:

- *Format*: JPEG/JPG/PNG
- *Maximum resolution*: 10,000 x 10,000 pixels ~ 20MB

NOTE: MPact floor plan origins are top-left, where as ADSP origins are bottom-left. If ADSP has only DWG (Auto Cad) files, then the corresponding floor plan does properly display in MPact, as ADSP does not provide a corresponding bit map image.

To upload a floor plan:

1. Select **Tree Setup** under the Operations main menu item.
2. From the **Tree Preview** area, open the tree hierarchy down to the floor level.
3. From the floor-level node drop-down menu, select **Edit Floor Plan** at the bottom of the menu.
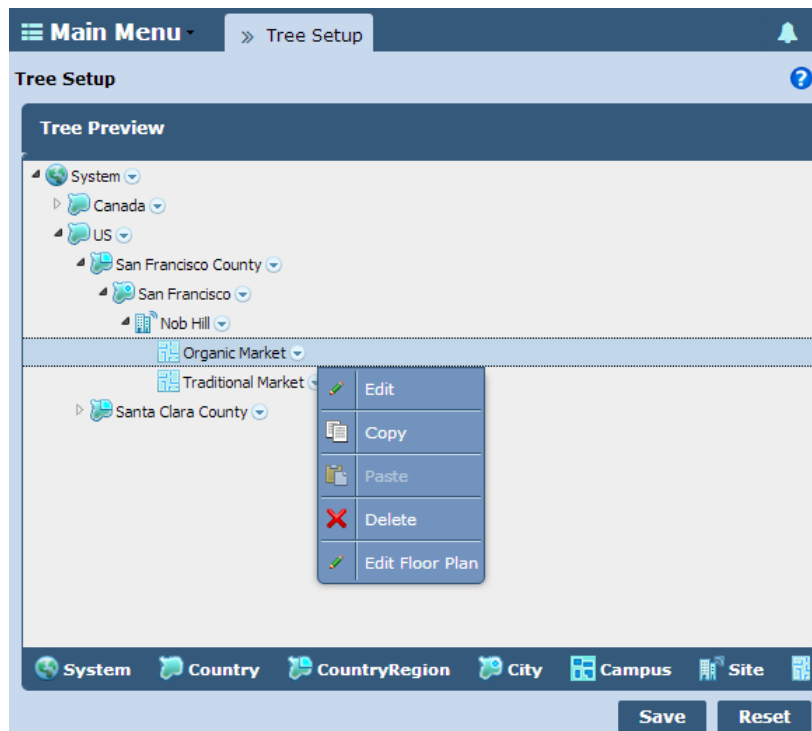

Figure 4-9 *MPact Server UI Tree Setup - Edit Floor Plan*

4. Select the **Load Map** button to browse and select a floor plan. In some cases, users may not want to upload a floor plan and can choose to use the default floor plan shown in Figure 4-10.

Figure 4-10 *MPact Server UI Tree Setup - Load Floor Plan*

5. Set the physical size of the area the floor plan represents:

- *Unit*: Select either Meters or Feet.
- *Width*: Enter the width of the floor, the default is set to 400 (either meters or feet).
- *Height*: Enter the height of the floor, the default is set to 200 (either meters or feet).

Figure 4-11 shows an example of a floor plan upload.

Figure 4-11 *MPact Server UI Tree Setup - Load Floor Plan*

6. Select **Save** to commit the updates or **Reset** to revert to the last saved configuration.

CHAPTER 5 ABOUT MPACT

Refer to the following for MPact Server license and revision information:

- *License Management*
- *About MPact*

5.1 License Management

Use the **License** screen to access License Management information about the current status of application use. Licenses are purchased on an annual basis and can be upgraded anytime as required. Licenses expire after one year, at the end of the month, from the date the license is purchased. License limits or violations apply on a monthly basis from the day of installation of the first license. MPact keeps track of license countable items, which includes site, beacon, and customer visits. Licenses expire at the end of the month the following year.

Figure 5-1 shows some examples of purchase options for annual licenses.

ANNUAL LOCATON SOFTWARE & ANALYTICS LICENSES	
MPACT-SMALL-50-LIC	Annual license per location / site for 50 beacons and / or 50,000 visits in 30 days - MANDATORY
MPACT-MED-100-LIC	Annual license per location / site for 100 beacons and / or 100,000 visits in 30 days
MPACT-LRG-500-LIC	Annual license per location / site for 500 beacons and / or 500,000 visits in 30 days
MPACT-UNL-X00-LIC	Annual license per location / site for 1000 beacons and/or 1000000 visits in 30 days

Figure 5-1 *MPact Annual License Options*

Oversubscribe maximum number of sites: The system (global) stops collecting any new client update data (beacon battery level, BLE & Wi-Fi visit/dwell time/current user count). The Active View client count will be zero. To recover, either purchase more licenses or remove sites from the system. Data collection will resume from the point of oversubscription.

Oversubscribe maximum number of beacons: The additional beacon will cause the system to stop collecting data from all the beacons (beacon battery level, BLE visit/dwell time/current user count). The system will still collect data (visit/dwell time/current user count) from Wi-Fi clients. To recover, either buy more licenses or remove additional beacons. Data collection will resume from the point of oversubscription.

Oversubscribe maximum number of visits: The additional visit will cause the system to stop collecting BLE visit/dwell time. The system will still collect data (visit/dwell time/current user count) from Wi-Fi clients. Buy more licenses to recover. The system resumes collecting BLE visit/dwell time the following month. Data collection resumes from the point of oversubscription.

> ✓ **NOTE:** When purchased, ADSP Licenses are separate and not integrated with the MPact Server licensing structure.

To view License Management information:

1. Select **License** under the About main menu item.

Locationing	Configuration	Operations	About
🐾 Dashboard	🔒 Account Management	🖥 System Maintenance	☀ License
👁 Insights	🐝 Categories	⚙ Operations	i About
📡 Health	⚡ Notifications	🔑 API	
📊 Active View	⇄ Subscribers	⫸ Tree Setup	
👥 User Tracking	⚙ System Configuration		

Figure 5-2 *MPact Main Menu - Operations*

The **MPact Location & Analytics License Management** screen provides details about the MPact Server license and its current state of use. Figure 5-3 shows no license has been applied.

Figure 5-3 *License Management*

2. Periodically assess whether the support terms of the current license account for growth and scalability for future deployments:

Server Unique Identifier	This unique identifier is specific to the server in use and is required when making calls to the technical support team.
Upload License File	Uploads a newly purchased license file provided by Motorola Solutions at the time of purchase.
Last Updated	Lists the date the application was last updated to its current revision. Licenses are renewed annually, however, updates to the license can be purchased as needed.
Licenses	Provides evidence the software has been legally purchased and the user has agreed to the conditions of use and distribution. *License String*: Unique string for each applied license. *Expiration Date*: End-of-month date following one year from the purchase date, when the license expires. *Number of Sites*: Number of sites to which this license is applied. *Number of Beacons*: Number of beacons to which this license is applied. *Number of Client Visits*: Number of client visits to which this license is applied. *Uploaded On*: Date the license was applied to the system.
License Details	*License Term*: Lists the entities (stores, beacons, or customer visits) for which the license is purchased. *Licensed*: Lists the number of licensed stores, beacons, and customer visits licensed for tracking within a thirty day period. *Consumed*: Lists the number of sites with the application in use, the number of beacons showing activity in the system, and the number of customer visits per global system. Newly added sites or beacons update after several minutes or within an hour for scalability setup. Newly added visits update on a per day basis.

5.1.1 License File Upload

When MPact Server software is initially installed, a license file is required before the MPact Software can store data. This license file is generated by the *Motorola's Enterprise Mobility Support Center* using the **Server Unique Identifier** found in the **License Management**, area of MPact Server.

To request an MPact Server License File:

1. Contact *Motorola's Enterprise Mobility Support Center* with the following information and request the license file:

    • MAC ID of the unit

    • Model number or product name

    • Software type and version number

    • Server Unique Identifier

    The support team generates the license file based on the annual license purchase agreement.

2. When the license file arrives, copy the license file onto the desktop.

3. Open MPact Server.

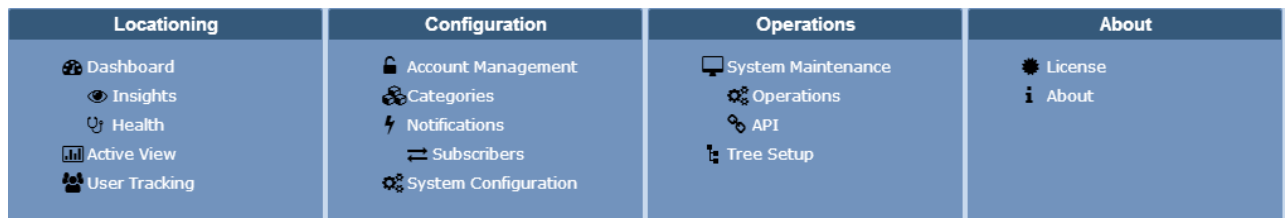4. Select **License** under the **About** main menu item.

Figure 5-4 *MPact About - License*

5. Place the cursor in the **Upload License File** field and select the License File received from the Motorola Customer Support team and placed on the desktop.
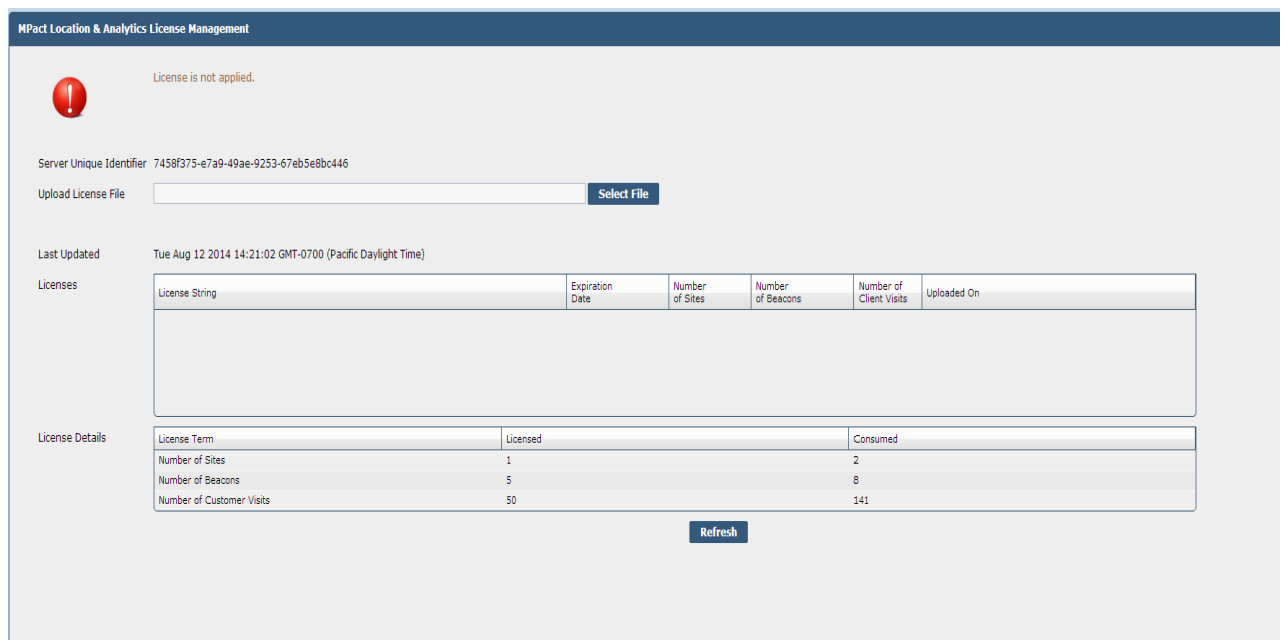

Figure 5-5 *License Management*

6. Upload the file.

7. Select **Refresh**.

   It takes at least a minute for the file to upload to the system and display license details on the page.

Figure 5-6 *License Management - Upload License File Complete*

5.2 About MPact

The **About** screen lists specific MPact **Application** and **Support** data to assist administrators in assessing whether their version of the MPact Server software is the latest, or requires an update to utilize the most recent feature set available from Motorola Solutions.

Additionally, the About screen contains contact information by region to streamline the support process should an administrator require support assistance.

To view MPact support contact information:

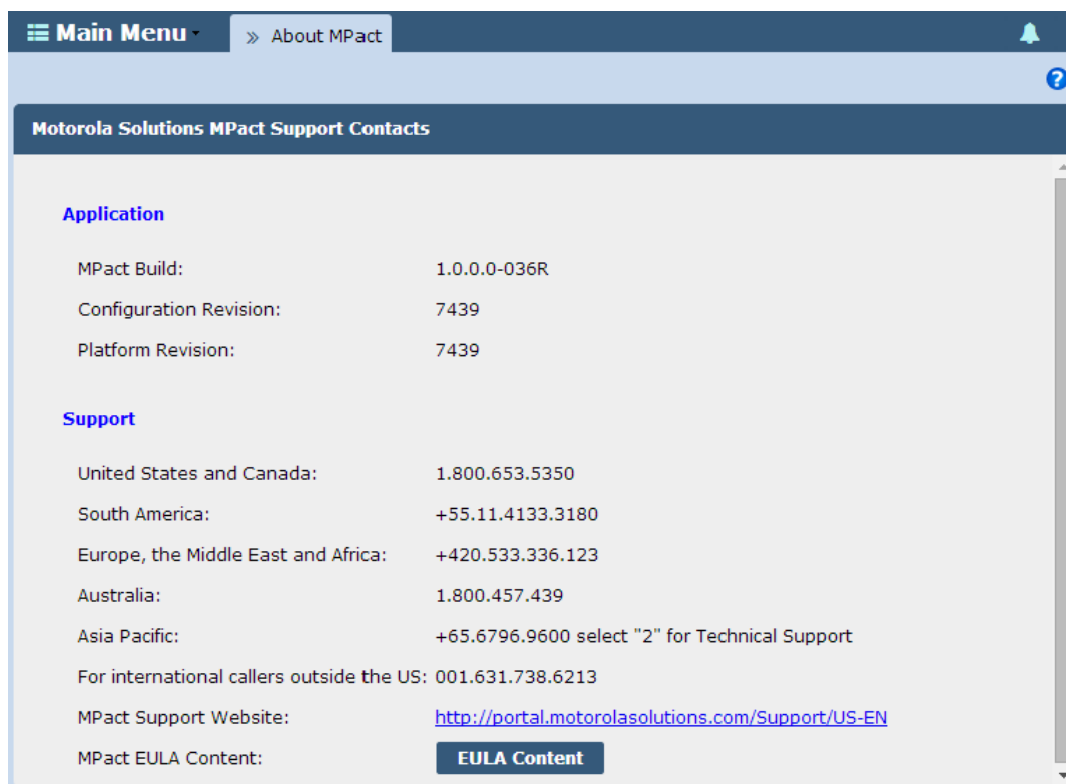1. Select **About** under the About main menu item.

Figure 5-7 *About MPact*

2. Refer to the About screen for the following:

Application	Refer to the *Application* field to confirm the MPact Server software build version. The build number is required for all support inquires or to assess whether a newer version may be available to provide enhanced support. Additionally, the *Configuration Revision* and *Platform Revision* describe which configuration version the listed build is utilizing and the platform in which its currently residing. This too may be requested by Motorola Support.
Support	The *Support* field lists telephone contact information for different geographic regions of the world to assist administrators in prompt issue resolution. Additionally, the URL to the Motorola Solutions support Web site displays to provide support contact information and product collateral in form of user manual documentation and product data sheets. The MPact *EULA Content* button provides Motorola Solutions, Inc. End User License Agreement.

CHAPTER 6 MPACT INTEGRATION WITH ADSP

The Motorola Solutions ADSP solutions protects wireless networks from wireless threats and attacks, maximizes wireless network performance and enforces policy compliance. A basic ADSP system consists of an AirDefense appliance, and one or more sensors. Sensors collect frames transmitted by 802.11abgn and 802.11ac compliant devices, and sends the data to a central ADSP server for analysis and correlation.

By integrating ADSP's location data into MPact, Motorola Solutions can provide its customers a unified location solution for both Wi-Fi and BLE. The data flow is from ADSP to MPact only, not vice-versa.

For more information on integrating ADSP and MPact, refer to the following:

- *Planning the Data Synchronization*
  - *ADSP's exportFloorplan Command*
  - *MPact's importADSPPlanningData Command*
- *MPact and ADSP Data Synchronization*

6.1 ADSP and MPact Server Communication

The ADSP server can export a file containing one or more of the following: Tree hierarchy, floor plans, all devices and their locations on the floor plan, and zone or regional information.
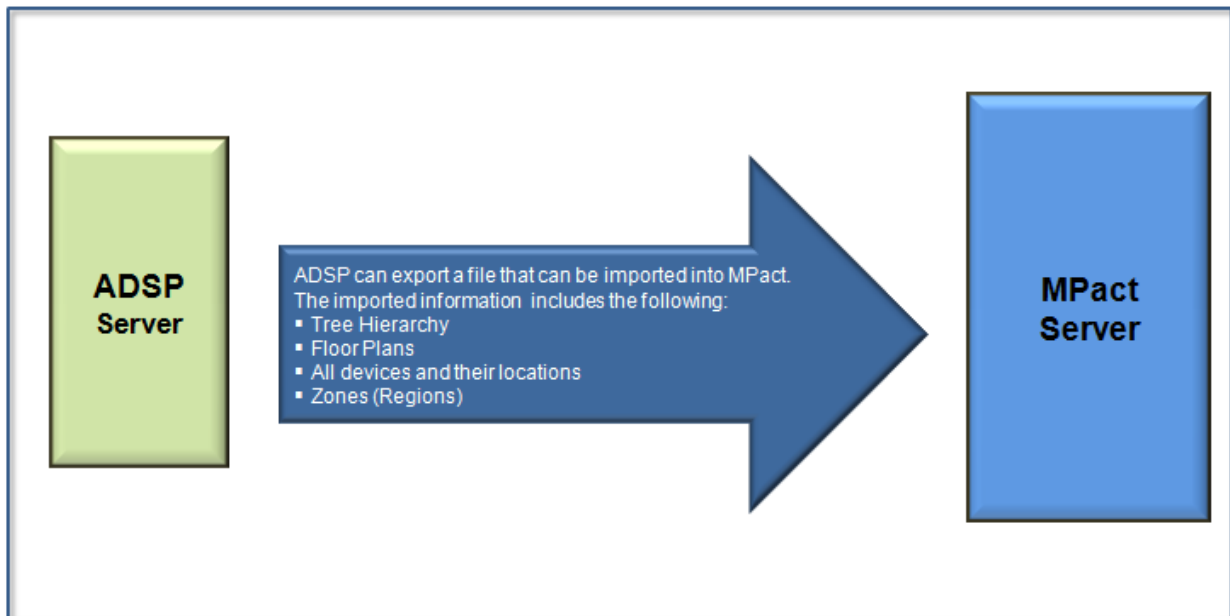

Figure 6-1 *ADSP and MPact Server Communication*

6.2 Planning the Data Synchronization

Before location data can be migrated from ADSP into MPact (as a one time manual process), the two platforms need to synchronize planning data. The planning data includes:

- Network tree hierarchy
- Floor plans along with their attributes (length, width etc.)
- Mapping devices to floor plans along with their locations
- Regions

> ✓ **NOTE:** ADSP floor plan data created in the AutoCAD application (.dwg file format) is not importable from ADSP into MPact.

6.2.1 ADSP's exportFloorplan Command

ADSP (after versions 9.1 and later) utilizes an `exportFloorplan` command to navigate its entire network tree hierarchy and export data into a single Zip file archive. This single ZIP file contains:

- Network tree hierarchy
- Floor plan images and attributes
- Network device locations
- Zones (called Regions in MPact)

The Zip file also contains calibration data and antenna information which is not utilized in the initial release.

ADSP places the file in */usr/local/tmp/floorplans.zip*. Once created by ADSP, the file must be copied to the MPact Server.

6.2.2 MPact's importADSPPlanningData Command

MPact is required to utilize its own proprietary CLI command created specifically for importing the data exported by ADSP's `exportFloorplan` command.

The `./mpact importADSPPlanningData /tmp/floorplans.zip` is executed from the same location as rest of the MPact's CLI commands. For more information, see *API*.

`importADSPPlanningData` examines the Zip file created by ADSP and imports file planning data (Country, Region, City, Area and Floor) into Mpact. Devices and virtual region location coordinates are retrieved and mapped to the floor plan. The virtual region is constructed from X-Axis and Y-Axis coordinates using a java.awt geometry library. Once the file is imported, launch the MPact UI and review the imported network tree, floor plans, devices and virtual regions residing on the floor plans.

6.3 MPact and ADSP Data Synchronization

Once ADSP locationing data is imported into MPact, verify the following synchronization between the two platforms:

- The ADSP tree and MPact tree should be the same

- Each ADSP floor plan should have been imported into MPact

- ADSP managed devices, along with their positions on their respective floor plan, should be locatable in MPact

- Each region on a floor plan should be reflected in MPact

> **NOTE:** If any data cannot be imported for a site, then that site's entire data set is not imported. The CLI's script will continue to import the remainder of the sites, and list the sites not imported into MPact.

Before enabling ADSP on the Server, ensure licensing includes ADSP service. The following instructions are performed in ADSP to enable the sending of **Location Subscriber Profiles** to the MPact Server.

To configure ADSP to send subscriber profiles to the Server:

1. Open ADSP.

2. Select **Operational Management** from the tree under **Configuration**.

3. Select the global node under **Location Subscriber Profiles** on the right-hand side of the screen.

4. Select the check box, **Add ADSP Subscription**.

5. Add the content for the Subscriber Push URL: <IP address>`/stats/services/rest/v1/proc/save_gzip/ss/updateClientStatusADSP`.

6. Select the check box, **JSON format**.

7. Enter the **Username** and **Password** for the MPact Server.

8. Select **Test Connection**.

   - If the test passes, go to the next step.

   - If the test fails, check the network (proxys) and make corrections.

9. Select the **Location & Region Events** tab.

10. Check the boxes for the following:

    - **Location Event Stream**

    - **Select All Sources**

11. Check the boxes for the following:

    - **Wi-Fi Zone Tracking**

    - **Wi-Fi Position Tracking**

12. Select **Save** and close ADSP.

When successful, the MPact Server displays the ADSP devices, location data is calculated, and ADSP feeds this information to MPact Server.

ADSP sends another attribute called apMac. The apMac is the MAC address for any device (sensor or access point) placed in the floor plan. The apMac acts as a reference point to lookup the correct floor or store.

MPact has implemented an API called `updateClientStatusADSP` which consumes both BLE and Wi-Fi Location data. In addition, MPact has implemented Basic authentication since ADSP uses this authentication to post the data. Other than these changes, which are already implemented, no other changes are anticipated.

APPENDIX CUSTOMER SUPPORT

Motorola's Enterprise Mobility Support Center

If you have a problem with your equipment, contact Enterprise Mobility support for your region. Support and issue resolution is provided for products under warranty or that are covered by an Enterprise Mobility Services agreement. Contact information and Web self-service is available by visiting *http://portal.motorolasolutions.com/Support/US-EN*.

When contacting Enterprise Mobility support, please provide the following information:

- *MAC ID of the unit*
- *Model number or product name*
- *Software type and version number*

Motorola Solutions responds to calls by email or telephone within the time limits set forth in support agreements. If you purchased your Enterprise Mobility business product from a Motorola business partner, contact that business partner for support.

Customer Support Web Site

Motorola's Support Central Web site, located at *http://portal.motorolasolutions.com/Support/US-EN* provides information and online assistance including developer tools, software downloads, product manuals, support contact information and online repair requests.

Manuals

To see manuals, go to: *https://portal.motorolasolutions.com/Support/US-EN/Wireless+Networks*.

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